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" 57, E. B. Meeker, 71 Abeel St., Kingston, N. Y.
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" 94, George R. Jones, Box 222, Washington, D. C.
" 95, A. P. Jerguson, Box 198, Key West, Fla.
" 100, Thos. Sullivan, Honolulu, H. I.
" 101, Thos. J. Hanlon, Box 765, Norfolk, Va.
" 102, Fred W. Linsemeyer, 210 Clinton St., So. Haven, Mich.
" 103, Herbert Parkins, New Berne, N. C.

TRADE PUBLICATIONS.

The latest short story of the Lives of Great Engineers issued by Wyman and Gordon, Worcester, Mass., is devoted to John Ericsson.

Carey's magnesia coverings are mentioned in a leaflet issued by the Philip Carey Manufacturing Company, Lockland, O. These covers are for low and high-pressure, as well as ammonia and brine pipes. Full information on request.

Dynamotors and motor generators are described in the latest bulletin issued by the Holtzer-Cabot Electric Company, Brookline, Mass. The bulletin comprises 20 pages, which are exceptionally well illustrated. There are many tables in addition to the text, giving much information regarding these machines.

"What They Say of the Motors that Mote" is the title of a catalogue issued by the Bridgeport Motor Company, Bridgeport, Conn. As the title indicates, the booklet is devoted to letters which have been received by this company speaking in the most flattering terms of the efficiency and satisfactory qualities of this company's gas engine.

"Mechanical Draft," by F. R. Still, is the title of a pamphlet issued by the American Blower Company, Detroit, Mich., devoted to a thorough discussion as to the economy of mechanical draft over chimney draft. This discussion is supplemented with cuts, and gives the result of numerous tests. Any one who is desirous of getting a thorough understanding of the subject treated should communicate with the company and mention MARINE ENGINEERING.

The Hayden and Derby Manufacturing Company, 89 Liberty street, New York, is distributing a very artistic catalogue devoted to injectors. This company has recently moved into its new factory, where the most improved machinery is installed for the making of its product. It also has unusual facilities for testing by steam or hydraulic pressure. The catalogue illustrates the injectors made by this company. A copy will be sent to any one on request.

The nautical almanac for 1903 and the first three months of 1904, published by Riggs & Company, 310 Market street, Philadelphia, Pa., contains many tables and useful hints, as well as a lot of rules and regulations covering ship and marine matters. This company has issued in conjunction with this almanac a very complete catalogue showing a full line of nautical instruments, including binnacles of various types, compasses, octants, quadrants, binoculars, telescopes, etc. The nominal price of 10 cents is charged for this catalogue.

The Wheeler Condenser and Engineering Company, 120 Liberty street, New York, has issued a catalogue giving full information about the Edwards patent air pump for marine engines, which is claimed to be very simple and efficient. The company announces the conclusion of an arrangement with the Edwards Air Pump Syndicate, Ltd., London, England, for the agency and rights to grant licenses to manufacturers on a royalty basis in the United States. This company is equipped with detailed drawings of all sizes and is prepared to give licenses to marine or stationary engine builders or all others who may wish to manufacture these pumps.

Gas engines are fully described in a very complete and attractive catalogue issued by the Hercules Gas Engine Works, San Francisco, Cal., whose Eastern agent is the Leeds Marine Equipment Company, Bridgeport, Conn. This catalogue shows several pictures of different types of craft, varying in size from a small launch to a 150-ton South Sea trading schooner, in which this company's gas engine is installed. These engines are built in sizes ranging from 1 3-4 horse power to 500 horse power and are made in different designs, covering everything that is ordinarily required for either launch purposes or for power in working boats. Full information concerning these engines can be had by applying to the Leeds Marine Equipment Company, Bridgeport, Conn.

When writing to advertisers please refer to MARINE ENGINEERING.

Lubriphite, which is used for cylinders using air, gas, oil, steam, and superheated steam, is described in a leaflet which the Lubriphite Company, 150 Plymouth street, Jersey City, N. J., is distributing on request.

Yachtsmen and others who are at all interested in pictures and books relating to yachting should send for a copy of the catalogue of books and nautotypes furnished by the Rudder Publishing Company, 9 Murray street, New York.

Motor boats and launches are fully described in a complete catalogue issued by the Bridgeport Motor Company, Bridgeport, Conn. The catalogue shows the boats made for various purposes and in many types. Catalogues sent upon application to the company.

"Good Paint" is the heading of a catalogue telling the many superior qualities of the paints made by John Lucas and Company, Gibbsboro, N. J., with branches in New York, Philadelphia, and Chicago. Application to the nearest office of this company will bring any information desired.

Users of packing will want to send for a copy of the booklet issued by the Pennsylvania Electrical and Railway Supply Company, Third street and Penn avenue, Pittsburg, Pa., describing Larkins' self-lubricating metallic packing. Several illustrations tell fully regarding the packing, and the text describes concisely how the packing is made and how applied, and in other ways gives information such as a user of packing would want to know.

The Wheeler Condenser Company, 120 Liberty street, New York, has a very complete catalogue pertaining to Baker's oil separators for separating oil from exhaust steam and making it possible for the water from condensation to be returned to the boiler, practically obtaining pure distilled water and a continued use of the same feed water. This catalogue should prove of value to any one interested in oil separators. A copy can be had by mentioning MARINE ENGINEERING.

"Pneumatic Tools" is the title of a catalogue issued by Joseph T. Ryerson & Sons, Chicago, Ill. This catalogue is devoted to many kinds of compressed-air-driven tools. Part 01 gives several cuts showing the Boyer hammer used in various ways, namely: clipping flanges, chipping and calking, riveting, etc. Part 02 of the catalogue is devoted to flue rollers, tappers, etc. This company has also issued a jubilee number of their monthly journal and stock list celebrating the close of their sixtieth year of a successful business career.

Any one interested in machine tools will find a most interesting catalogue in the one just issued by the Pratt and Whitney Company, 136 Liberty street, New York, entitled "Thread-Milling Machine." The catalogue is handsomely printed in two colors and is fully illustrated, showing the many types and sizes of machines which this company manufactures for thread cutting. There are also pictures of the cutters and splendid illustrations giving samples of the work which these machines will do, together with much other valuable information.

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AMONG THE FINE MECHANICAL TOOLS WHICH WE MANUFACTURE FOR THE USE OF ENGINEERS AND MACHINISTS

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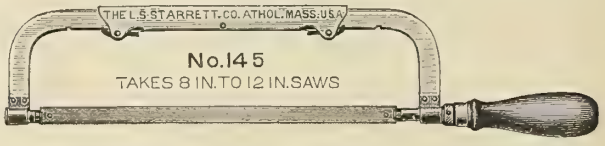

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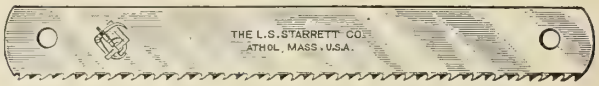

These blades are made of the finest steel; the teeth are sharp and too hard to file.

Every Engineer should have them among his tools.

The L. S. Starrett Co., Athol, Mass.

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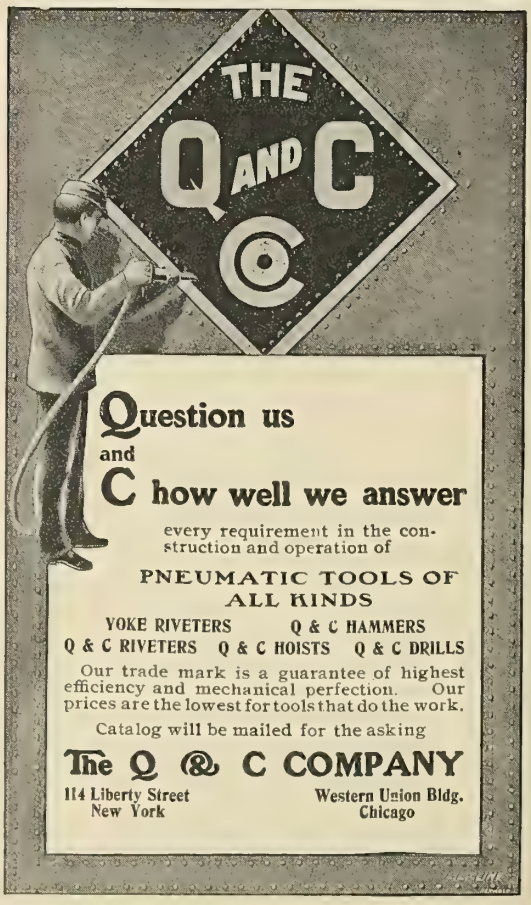

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Our trade mark is a guarantee of highest efficiency and mechanical perfection. Our prices are the lowest for tools that do the work.

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THE best water-proof grease for wire cables, rudder chains and hoisting engines is Dixon's Graphite Grease. Send for Sample and Booklet 72.

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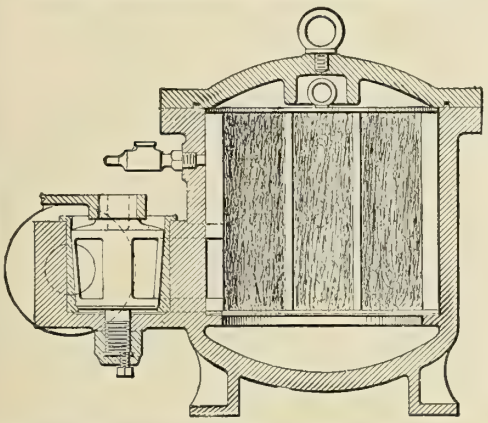
Will pay for themselves in less than a year by protecting your **Boilers** from **Grease, Oil** and **All Mechanical Impurities.**

For Steamships, Yachts, Tugs, Factories



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Try them—If you don't like them we'll take them back and refund purchase price.

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George W. Scott, consulting engineer, 758 The Rookery, Chicago, Ill., asks that readers of MARINE ENGINEERING send to him catalogues and other trade publications for filing and for reference.

Graphite facing, used for preventing adhesion of a metal to the sand of which the mold is composed, is fully described in a booklet issued by the Joseph Dixon Crucible Company, Jersey City, N. J.

Users of gas engines will be interested in the catalogue issued by James Craig, Jr., 556 West Thirty-fourth street, New York, describing the Craig engines, which range from about 3 to 45 horse power in size.

The latest publications of the Fort Wayne Electric Works, Fort Wayne, Ind., are Bulletin No. 1,037, describing "Mast Arms," and Bulletin No. 1,038, describing the "B. and B. Commutator Truing Device."

Any one who has use for a small engine for direct-connected purposes will want to send for a copy of the catalogue just issued by the New Britain Machine Company, New Britain, Conn., describing the Case automatic high-speed engine. The catalogue is neatly printed and contains many illustrations giving different views of this well-known engine, together with tables of capacities and much other information. Copies can be had free upon application.

The Almy patent sectional water-tube boiler will be found thoroughly illustrated and described in a new catalogue which this company now has ready for distribution. The catalogue is 6 by 9 inches in size and comprises 64 pages. There are many illustrations of the boilers, explaining fully their construction and arrangement, many names of users of these boilers, and pages upon pages of pictures of yachts and other vessels upon which these boilers are used.

CALENDARS RECEIVED.

From the Ashton Valve Company, 271 Franklin street, Boston, Mass., a calendar 10 by 13 inches in size, on which is an excellent reproduction of a well-known picture. Copies are sent free to all inquirers who specify with what special business and position they are connected.

From the Champion Rivet Company, Cleveland, O., a calendar 15 by 20 inches in size, upon which is a large engraving of a well-known work of art, "The Flight of Time," a draped female figure.

From the Pennsylvania Electrical and Railway Supply Company, Penn avenue and Third street, Pittsburg, Pa., a large calendar, upon which is a picture finely colored, entitled "Heels over Head," being a picture of street boys playing games.

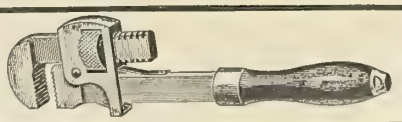
M. E. B. A. ENTERTAINMENT.—M. E. B. A. No. 33, Port of New York, held its annual entertainment and reception on the evening of December 11, at Murray Hill Lyceum. In spite of the sleet and storm which stalled the elevated and surface cars, the attendance was large, and the occasion was greatly enjoyed by all who were present.

WATCH THIS SPACE FOR OUR NUMEROUS SPECIALTIES.

WALWORTH MFG. CO. TOOLS and SUPPLIES for STEAM WATER and GAS USERS BOSTON MASS

Always Use the STILLSON Adjustable Pipe and Nut Wrench.

TAKES SIZES 1/8" UP TO 5 INCHES



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The Only WRENCH That Gives Entire Satisfaction.

JOBBERS SELL THEM—IF YOURS DON'T, WRITE.

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Write for our BLUE CATALOGUE "D," showing complete line of engineers' pipe fitting tools.

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Specially constructed for service on shipboard

COMPACT
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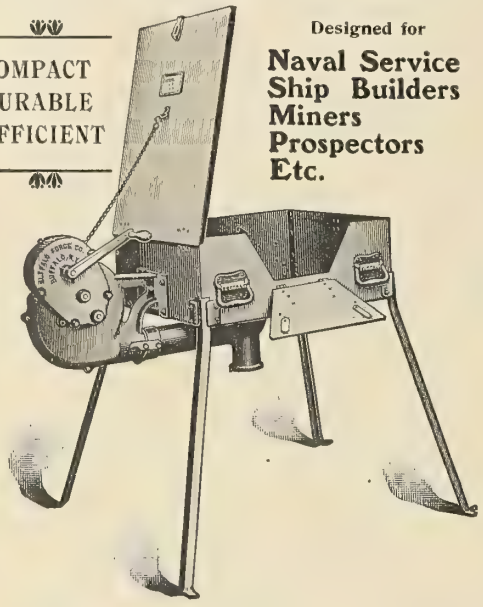

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Has just issued stringent regulations to prevent poisoning by the use of white lead. .· .· .·

ZINC WHITE

is the best preventive of lead poisoning; much zinc, little poison; all zinc, no poison. .· .·

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Our Practical Pamphlets
"The Paint Question,"
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11 Broadway
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BUSINESS NOTES.

LARKIN'S METALLIC PACKING.—The secretary of the Union Storage Company, Pittsburg, Pa., writes as follows in regard to Larkin's metallic packing: "Our chief engineer advises us that he has used some of this packing for over a year on one of our engines in what he considers the hardest wearing point on the whole engine, and says that it has given excellent satisfaction and that he can recommend it highly."

VALVE RESEATING MACHINE.—In writing recently to the Leavitt Machine Company, Orange, Mass., Chief Engineer Joseph F. Hayes, of the Pittsburg Steamship Company, Cleveland, O., stated: "The Morse & Dexter valve reseating machine, as furnished by you to this company, has proven very satisfactory, and I certainly believe it would pay to have one on board of each one of our first-class steamers."

MEETING OF WESTINGHOUSE MANAGERS.—The Westinghouse Electric and Manufacturing Company, Pittsburg, Pa., recently held the annual meeting of its district managers, representing all parts of the United States. These managers visited the works and offices of the company at East Pittsburg, inspecting all of the latest improvements and machinery, and there were discussions as to the best methods of presenting the strong points of Westinghouse apparatus to customers. In addition to this meeting there was a very notable dinner, at which the engineers and executive officers from the home office of the Westinghouse Company were present. The Westinghouse Company has recently installed some very interesting plants, in some places displacing the direct current with alternating current. There have also been interesting installations in large plants in out-of-the-way places, and of induction motors in manufacturing establishments, etc.

U. S. METAL POLISH.—George W. Hoffman, 295 East Washington street, Indianapolis, Ind., reports the year just closed as by all odds the most prosperous one in the history of his business. He reports a steadily-increased demand for and sale of his U. S. infallible metal polish, both in paste and fluid forms. The extensive advertising which he has done has brought customers from all parts of the world.

DULUTH STOKERS.—We are informed by the Duluth Stoker Company, Duluth, Minn., that this company now has stokers in successful operation on steamers *General O. M. Poe, Mataffa,* and *James H. Hoyt.* The Eastern Shipbuilding Company, New London, Conn., is reported to have ordered Duluth stokers for use in one of the big steamships about to be launched by the Great Northern Steamship Company. Orders in hand outside of these for stokers are for the following steam vessels: Pittsburg Steamship Company's steamers *Samuel F. B. Morse, Alex. McDougall,* and *Harvard,* and stokers for three new ships of another line, making in all ten large steel ships to be fitted with these stokers.

SMOOTH-ON GASKETS.—A Smooth-On gasket connection may take a little longer time to make than when using an ordinary steam packing, but when once made it is claimed to be more durable and to improve with age. Difficult flanged connections can easily be made with Smooth-On, as it is applied in a plastic state and adapts itself to the flanged faces, whether parallel or not. For high-temperature and high-pressure work the following show its value: It has been tested to 1,500° Fahrenheit, and withstood 400 pounds steam pressure without injury. Smooth-On, when hard, expands and contracts the same as iron, keeping the joint tight at all temperatures, and it will withstand steam, water, fire, or oil. A 60-page illustrated book, which will give further information regarding this subject, will be sent free. The cements are packed in 5, 10, and 25-pound tins.

M. E. B. A. No. 59, Port of Boston, will hold its annual ball, for the benefit of the sick and death fund, on the evening of Monday, January 12. Tickets can be had from the members of the Association, at 207 Webster street, East Boston, Mass.

METAL SAWING MACHINE.—The Q. & C. Company, Western Union Building, Chicago, Ill., has just shipped one of its largest-sized metal-sawing machines to Manila, where it is to be used in the United States Government navy yard at Cavite.

THRUST BEARINGS.—When it is recalled that about 15 per cent. of the horse power of an engine is taken up in friction, and that the thrust of a propeller shaft on board ship equals the resistance of the vessel's progress through the water, it is readily understood how a roller thrust bearing will reduce the amount of friction of the engines. The Mossberg and Granville Manufacturing Company, Providence, R. I., has demonstrated on several vessels equipped with its roller thrust bearing that by the reduction of friction the same amount of indicated horse power will drive the vessel at a greater speed.

THE EQUIPMENT OF VESSELS.—Realizing the disadvantage a shipbuilder and owner have in furnishing a vessel, as it is rather out of the line of their general occupation, the Siegel-Cooper Company, New York, decided some time ago to establish a marine contract department, devoted exclusively to the furnishing of a vessel complete from the forecastle to the captain's cabin. Anything that can possibly be needed on a ship can be found under the roof of this store, and this work is under the management of a person thoroughly familiar with vessels and their equipment, thereby insuring complete satisfaction to out-of-town parties. The company is at present furnishing steamers, yachts, and vessels of all descriptions at the shipyards along the Atlantic coast from Maine to Virginia, and several yachts on the Lakes.

PORT HURON AIR TOOLS.—The Port Huron Air Tool Company Ltd., Port Huron, Mich., recently sold a large order of tools to the John H. McGowan Company, Cincinnati, O., and in reply to the letter written to the company received the following: "Answering your letter requesting an expression concerning the utility of the air drilling and studding machine recently purchased from you, will say that we are thoroughly satisfied with it, as we are enabled to do from five to five and one-half times the work with it that we were able to do prior to its application. We find it infinitely better than attempting to do the studding with drill presses on account of the friction device in connection with drill press studding attachments, which we have found unreliable. With your machine we are able to regulate the pressure of the air to suit the various sizes of studs, which can be set without any injury whatsoever to the machine. For the reason of these features we think it is eminently well adapted for the purpose we have put it to, and far superior to anything we have yet had experience with or have heard of."

For Steam Making Refrigerating Apparatus

MECHANICAL THERMOMETERS

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For All Engineering and Manufacturing Purposes

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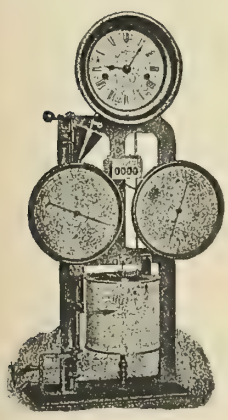
PNEUMATIC TOOLS.—The Philadelphia Pneumatic Tool Company, Twenty-first street and Allegheny avenue, Philadelphia, Pa., has just completed the equipment of Kaiser Wilhelm's new navy yard at Kiel, Germany, with an outfit of Keller pneumatic tools. This is the latest phase of the American commercial invasion of Europe. Looking in the opposite direction, this company reports an increasing trade on the Pacific Coast. Mr. O. A. Berger, the representative of the Philadelphia company in San Francisco, has just visited the home office, bringing with him some large orders from the various shipyards, steel works, etc., on the Pacific Coast.

ORDERS FOR AMERICAN BLOWER COMPANY.—The American Blower Company, Detroit, Mich., reports a number of large orders on its books, among which are contracts for heating apparatus for the Iron City Sanitary Manufacturing Company, Zelianople, Pa.; Enterprise Manufacturing Company, Columbiana, O.; B. F. Lee Company, Braddock, Pa.; Monongahela (Pa.) Forge and Furnace Company; New York Glucose Company, Edgewater, N. J.; and the Michigan Malleable Iron Company, Detroit, Mich.; mechanical draft apparatus for the International Paper Company (Corinth, N. Y., mill); Geo. H. Hammond Company, Chicago; Lehigh Valley Coal Company, New York; Princeton (N. J.) University, and the Binghamton (N. Y.) Electric Light and Power Company.



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NICHOLSON SHIP LOG CO.,
204 Superior Street, CLEVELAND, O.

Gentlemen:—We are now laying up our boats for the winter, and as I have been inspecting and made report to our General Manager, I cannot refrain from writing you direct and complimenting the working of your Ship Log. It is something that should be adopted by all steamers. It puts the Captain and Engineer in a position to know exactly the speed being made, and the log is so accurate that we could not think of getting along without it. I take pleasure in recommending the log to all Captains and vessel owners.

Yours truly, D. McLACHLAN, Captain, "Eastern States."

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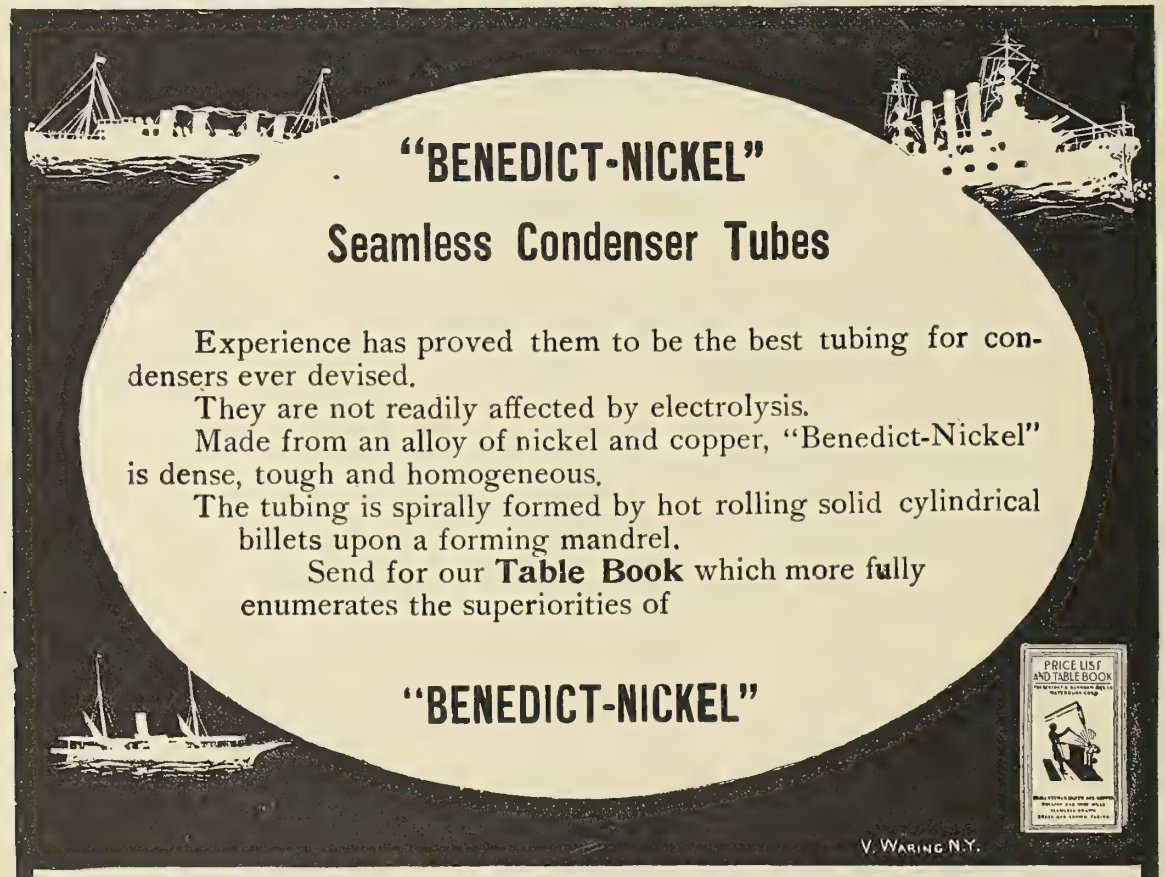
Pacific Coast Agent: W. H. PIERSON, No. 6 California St., San Francisco, Cal.

CATALOGUES ON APPLICATION.

NICHOLSON SHIP LOG CO., 204 SUPERIOR STREET, CLEVELAND, O.

UNIQUE MECHANICAL DRAFT PLANT.—The mechanical draft feature of the Union Electric Light and Power Company's plant, which will be used for lighting the World's Fair grounds at St. Louis, will be an installation of unusual interest to engineers. The plant is to be equipped with both forced and induced draft apparatus, which is unusual. A mechanical draft plant usually is either of the forced or induced draft type, but in this case both will be used. There will be twenty-six boilers of 700 horse power each and they will be equipped with automatic stokers. Fans will be used for the forced draft, and the boilers will also be operated under induced draft. The forced-draft fans will be four in number, of the full-housing type, size 160 inches. They will be driven by 10 by 10 vertical engines, direct attached. The induced-draft fans will be two in number, of a size quite in keeping with the basis upon which the exposition is being built, the wheel diameters being so large as to be seldom met with in mechanical-draft engineering. Each of these induced-draft fans will be of the full-housing type, size 230 inches, and will be driven by 9 by 10 double-cylinder, double-acting upright engines. The Buffalo Forge Company, Buffalo, N. Y., is building the fans and engines for the above equipment.

BRAZING CAST IRON.—A method of saving imperfect castings by the use of a brazing mixture called "Ferrofix" is now being introduced into the foundries of this country after successful operation in many European shops. By the use of "Ferrofix" it is claimed that any two metallic surfaces may be brazed together in such a manner that the joint is made as strong as the solid metal. The largest use for this is in repairing iron castings, but the flux can also be used in brazing one metal to another. The operation is very simple and inexpensive, requiring no expert skill. The American Brazing Company, 136 South Fourth street, Philadelphia, Pa., is handling this process, either repairing imperfect castings at its works or supplying the "Ferrofix" to the foundries.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Experience has proved them to be the best tubing for condensers ever devised.
They are not readily affected by electrolysis.
Made from an alloy of nickel and copper, "Benedict-Nickel" is dense, tough and homogeneous.
The tubing is spirally formed by hot rolling solid cylindrical billets upon a forming mandrel.
Send for our Table Book which more fully enumerates the superiorities of
"BENEDICT-NICKEL"
PRICE LIST AND TABLE BOOK
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Made in all sizes for manhole, handhole and pipe fittings.

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JOHNSON BILGE PUMP.—A very practical device, designed to fill a long-felt want, is offered to the boating public in the Johnson bilge pump for rowboats and launches, which is being placed on the market by the National Manufacturing Company, Worcester, Mass. Although only 15 inches long and 1 inch diameter, this pump, it is claimed, will discharge a steady stream over a boat's rail at the rate of 4 gallons per minute easily, and has a maximum capacity of 6 gallons. It is made entirely of brass, so does not rust, and is always in working order, and its small size enables it to be stowed in an ordinary locker or under the thwarts quite out of the way. As it will take up the very last drop of water, it is now possible to bail out a boat and still keep one's hands clean and dry, which is certainly a great improvement over squeezing a cold wet sponge dripping with dirty or greasy bilge water. Although regularly furnished with five feet of hose, any length desired can be supplied on special order, and owner's name stamped on the barrel for a slight extra charge.

YACHT AND LAUNCH MODELS.—Edward A. Boardman, 20 Central street, Boston, Mass., in connection with his business of designing yachts and launches, is having models made from his designs for the smaller class of yachts, as well as for speed launches.

PHOTOGRAPH OF NAVAL ARCHITECTS.—The photograph of the members of the Society of Naval Architects and Marine Engineers which Enrique Muller, 714 Monroe street, Brooklyn, New York, took, is the one which is reproduced in the December issue of MARINE ENGINEERING, copies of which can be had from Mr. Muller or from MARINE ENGINEERING. This was the only photograph which Mr. Muller took of the members of the Society.

ROOFING FOR ARMY BARRACKS.—The United States Government orders of F. W. Bird and Son, East Walpole, Mass., makers of "Neponset Papers" and "Paroid Roofing," 1,200,000 square feet of the latter for immediate shipment to Manila, Philippine Islands. The amount, designed for army barracks and other Government uses, is sufficient to cover twenty-seven acres of roofs, and is probably the largest shipment of roofing ever made.

EMERGENCY PACKAGE.—The Adolph Levy Company, 127 East Twenty-third street, New York city, reports a steady increased demand for its emergency packages. These packages are made up in different forms, the $10 case being a very popular one. This is used by large manufactories and steamship companies very extensively. All recent Arctic exploring expeditions have been supplied with these cases, the Baldwin-Ziegler expedition having them. Many large manufacturing establishments, railroad companies, and steamships supply each department with one of these emergency cases.

MANY ORDERS FOR SAILS.—Wilson and Silsby, Rowe's Wharf, Boston, Mass., have an immense amount of work on hand. Among recent orders received are the following: George A. Piersol, Philadelphia, sails for 18-footer; George Lawley and Son, Boston, sails for 18-footer and 30-footer; Francesco Gallinari and Figlio, Livorno, Italy, sails for 36-foot cutter; Cary Smith and Barbey, New York city, sails for 18-footer; Tams, Lemoine and Crane, New York, nineteen suits for 18-footers; Dr. Henry L. Eno, New York city, sails for yacht *Latona;* Albert Stone, Boston, sails for yacht *Ursula;* A. S. Bigelow, Boston, awnings for yacht *Pantooset;* W. O. Gay, Boston, sails for yacht *Athenie;* J. Malcolm Forbes, Boston, sails for yacht *Volunteer;* A. H. Baker, Boston, sails for 22-foot sloop; Greenport Basin and Con. Company, sails for 30-foot yawl; George W. Shiverick, Kingston, Mass., four suits of sails for 18-footers; W. B. Smith, Quincy, Mass., sails for 21-footer; George M. Rae, Yonkers, N. Y., three suits of sails for 18-footers; Gardner and Cox, New York city, sails for 70-foot schooner; George T. Lippincott, Atlantic City, N. J., sails for houseboat; O. M. Hepburn Boat Company, Toledo, O., and R. D. Chandler, Fair Haven, N. J., iceboat sails; William E. Iselin, New York, sails for yacht *Emerald.*

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Voltmeters, Ammeters,

MILLIVOLTMETERS, VOLTAMMETERS, MILLIAMMETERS, OHMMETERS, PORTABLE GALVANOMETERS, GROUND DETECTORS, AND CIRCUIT TESTERS.

Our Portable Instruments are recognized as **the standard** the world over. Our **Voltmeters** and **Ammeters** are unsurpassed in point of extreme accuracy and lowest consumption of energy.

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BERLIN:—European Weston Electrical Instrument Co., Ritterstrasse 88.
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WESTON Standard Portable Direct Reading Voltmeter.

NEW FIRM OF NAVAL ARCHITECTS.—Arthur P. Allen and Webb R. Ballord have organized the firm of Allen and Ballord, 104 New York block, Seattle, Wash., as consulting naval architects and marine engineers. They are prepared to design, advise, and superintend in all branches and types of marine construction.

ANNUAL SPORTSMEN'S SHOW.—The ninth annual Sportsmen's Show will be held this year under the auspices of the National Sportsmen's Association in Madison Square Garden, New York city, beginning Saturday, February 21, and continuing until Saturday, March 7. Many new and attractive features have been arranged for this year's show. Launch and engine builders who intend to make exhibits should apply at once for space to J. A. H. Dressel, 313 Broadway, New York city. All trade exhibits, except launches, engines, and motors, will be in the gallery.

SCHOOLSHIP YOUNG AMERICA.—The schoolship *Young America,* already referred to in these columns, because of the large number of students which will live on her, is to be completely supplied with life-saving apparatus. She will carry ten lifeboats on davits, a longboat, and nests of Carley lifefloats, manufactured by the Carley Life-float Company, Produce Exchange, New York city, on the deck house fore and aft. This latter device, we are told, has the approval of and has been adopted by the United States navy, the indorsement of the Supervising Board of S. S. Inspectors, and the high recommendations of Capt. W. F. Kilgore and other officials of the Revenue Cutter Service. In addition to their value as a life-saving apparatus, these floats will doubtless be thrown over the side of the ship each morning, and the embryo tars will take a dip in the briny. Those who have mastered the art of swimming will be permitted to disport themselves in deep water, but the novice will be taught to swim in the safe baskets of the Carley device until he is sufficiently proficient to leave its precincts.

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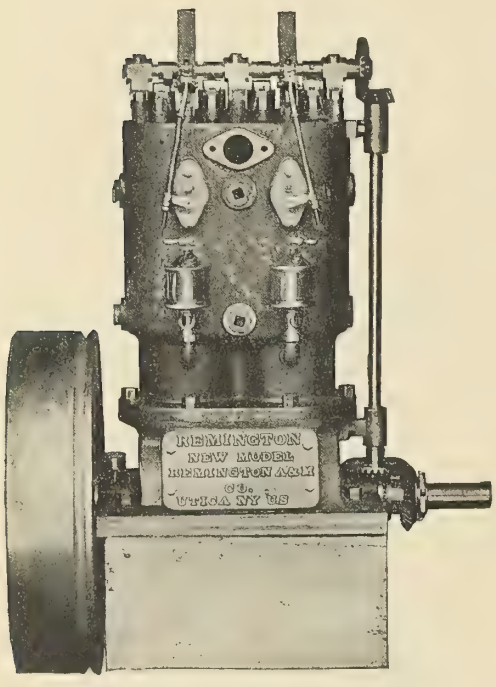

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" 102, Fred W. Linsemeyer, 210 Clinton St., So. Haven, Mich.
" 103, Herbert Parkins, New Berne, N. C.

TRADE PUBLICATIONS.

"A Toot for Dixon's Graphite" is the title of a folder issued by the Joseph Dixon Crucible Company, Jersey City, N. J. This folder deals with the proposition of reducing friction to a minimum in automobiles. This company claims the use of Dixon's graphite in its various forms provides very economical and successful operation as far as lubricating is concerned.

The American Steam Gage and Valve Manufacturing Company, Jamaica Plain, Boston, Mass., has issued a most complete catalogue containing 243 pages, bound in cloth and very neat in design. This catalogue shows the specialties manufactured by this company, which include everything in the way of gages and valves, and which will prove useful to any one who wants a thoroughly modern book on the subjects dealt with.

The asbestos catalogue of the H. W. Johns-Manville Company, 100 William street, New York city, is a handsome booklet of 100 pages. The half-tone illustrations, numbering nearly 150, show asbestos in many conditions, from the natural state as it is mined, to the various non-conducting forms into which it is manufactured. The arrangement of the catalogue is such that quick reference may be made to any article, as it has a complete alphabetical index.

A complete catalogue is issued by J. H. Williams and Company, Brooklyn, N. Y. This catalogue contains some handsome cuts of the different sections of the factory, and is bound in heavy paper. This company is the sole maker of the Vulcan Drop-Forge specialties. The catalogue is valuable to any one desirous of having a reference book covering a complete line of wrenches and drop-forgings, and will be mailed to any one communicating with the company.

"Boat Talks" is the title of a very attractive booklet issued by the Norwalk Brass Company, Norwalk, Conn. The booklet is devoted to the claims of the company for the superiority of its reversing gear and propellers. It also contains a page devoted to questions concerning propellers, and it may be filled out and sent to the company, who will give the sender any information based on this list. The information should be valued by any one who wants a thorough knowledge of the subject.

"Fuel Oil and Its Vast Utility" is the subject matter of a catalogue issued by Tate, Jones and Company, Empire Building, Pittsburg, Pa. The Kirkwood system is thoroughly described in this catalogue, supplemented with cuts showing the different parts. The points of advantage which this company claims for that burner over others are: It can be operated with either steam or compressed air; it does not clog; is easily cleaned, and the supply of oil and steam is regulated at the point of combustion rather than far back in the burner.

The Duluth Stoker Company, Duluth, Minn., shows the workings of the Duluth stoker in a catalogue just issued. This company claims a great saving of fuel, owing to the fact that the firing is steady and uniform. No fire doors are open to cool off the furnace. A steady fire maintains a steady steam pressure. The furnace is smokeless. Owing to the complete combustion and the system of furnace walls and arches with the heat draft arrangement, an increased evaporation is claimed, first, on account of the intense heat of the furnace, and secondly, because being smokeless it always gives a clear heating surface to absorb the heat.

"Marine Gasoline Engines" is the title of a booklet just issued by the Chas. A. Strelinger Company, Detroit, Mich. It is a paper-bound book, 6 by 8 inches in size and comprises 76 pages. The title page describes it as "Letters and Answers and Some Other Stuff about Marine Gasoline Engines." There are many illustrations and all sorts of information about this type of engine, among the subjects being Horse Power, Batteries, Boats, Danger, All Styles and Types of Engines, Sparking Devices, Lubrication, Propellers, Reversing Mechanisms, Speeds, Tanks, and many other similar subjects. We have never seen a gas-engine catalogue giving so much general information as this one.

When writing to advertisers please refer to MARINE ENGINEERING.

The folder issued by the Crandall Packing Company, 136 Liberty street, New York city, tells about Crandall packings, which include expansion ring packing for steam up to 120 pounds, made to fit the box which is lubricated by the cold oil process; packing for high-pressure work, sheet packing, which is a combination of asbestos and other heat-resisting materials with pure Para rubber, etc.

The Holmes torpedo launch is fully described in a catalogue issued by the Holmes Shipbuilding Company, 18 Broadway, New York, who claims this torpedo launch is the result of numerous experiments with various designs of launches which can be driven with at least 20 per cent. less motive power for a given speed or at higher speed with the same power required in the average launch of equal size.

The General Power Company, 81 Fulton street, New York city, is distributing a catalogue giving a complete description of the oil-electric machine, oil-electric plant, and Secor engine. This company offers the Secor engine as a practical solution of the problem of generating power by direct process. The Secor automatic oil-electric machine, in which the engine and dynamo are integrally combined in a self-contained unit, is made available everywhere at a low cost. A copy of this catalogue will be mailed to any one by communicating with the company.

"Stamped and Embossed Metal Boats" is the title of a catalogue issued by W. H. Mullins, Salem, Ohio, showing many pictures of his boats, which he claims can be furnished at a cost to compare with the cheapest boats placed on the market. They can be left exposed to the weather for any length of time and be as tight and seaworthy at the end as if not exposed, while a wooden boat would crack and be rendered useless. These boats are stamped in dies by heavy machinery, and are light in weight and durable. Investigation as to the construction of this boat is invited.

The Vulcan lubricator is discussed in a leaflet issued by A. F. Boettcher, Rowlands, Pike County, Pa. The manufacturer claims this to be a highly improved lubricant for milling, cutting, drilling, boring, tapping, etc., and to be particularly adapted for milling, cutting, and brass drawing, and its merits claimed are: Efficiency of action, cheapness, and its non-injurious effect upon the tools and the work it is used on. When dissolved it flows as freely as oil. It is used by railroad and car shops and for locomotives. Full particulars concerning this lubricant sent on application.

"Architectural Hand Packing, or How to Use Spar Composition and Preservative," is the title of a catalogue issued by David B. Crockett Co., Bridgeport, Conn. The company claims that its spar compositions and preservatives are composed of the hardest and most expensive gums. Spar composition, as the name indicates, was primarily intended for spars and all exposed parts of a vessel, but it is equally valuable for all outside work. The composition, while preventing the absorption of moisture by closing the pores of the wood, also excludes the germs of disease. This catalogue will prove useful to any one interested in this subject.

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which tells the exact truth about a shaft's revolutions. The working parts of this Indicator are encased, and the dial plate has two rows figures, reading right or left, as the shaft may run.

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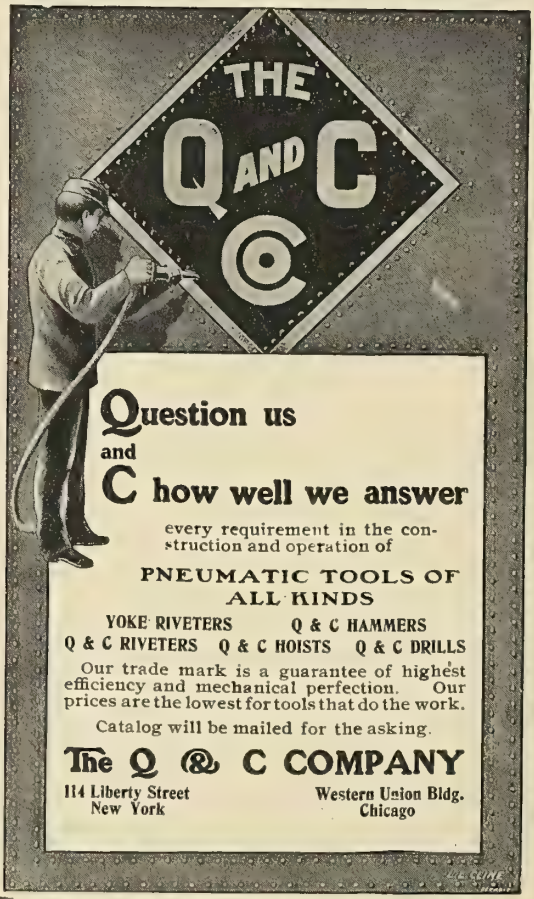
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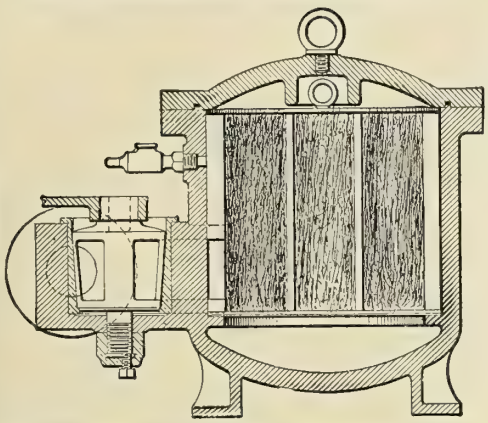

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Blackburn Smith Co., 29 Broadway NEW YORK

The American Blower Company, Detroit, Mich., is sending out a folder giving an excellent idea of the A. B. C. fan system of heating. The folder is issued with special reference to a system which this company has just installed in the large establishment of the Natural Food Company at Niagara Falls.

The Almy Water-Tube Boiler Company, Providence. R. I., gives an excellent idea of its boiler in a catalogue just issued. The catalogue is fully illustrated, and besides containing many pictures of this boiler, it has a large number of pictures of yachts and other vessels upon which Almy boilers are used.

The Pratt and Whitney Company, Hartford, Conn., is distributing a catalogue pertaining to the thread milling machine which is designed for the manufacture of precision screws, feed screws, and spiral gears for high-grade machine tools, also for threading on other work, such as drill feed screws, temper screws, and thrust screws for friction hoisting drums, valve stems, and the like, in which the low cost of manufacture is the prime consideration. Valuable information regarding these machines will be sent by communicating with the company.

"Facts Pertaining to Clean Boilers" is the title of a catalogue issued by Engel and Fagersten Chemical Company, Chicago, Ill. This catalogue contains some valuable information to those who have the care of boilers. It shows why the forming of the scales on the shell and tubes of steam boilers is a financial drain on the owner. This company makes the claim that the formation of scale in a boiler can be prevented by using Neptune anti-fouling compound, which has electrolytic properties of converting the insoluble compound of the element into soluble compound, thus preventing scale formation.

"Chief Points Regarding the Electric Storage Battery" is the title of a folder issued by the C. W. Hunt Company, West New Brighton, Staten Island, N. Y. This folder covers a few chief points regarding the Hunt electric storage battery locomotive. The claims made for this class of locomotives are safety in operation; no sparks to cause fire risk; no trolley wires to maintain or to interfere with overhead cranes or pulleys. This locomotive is suitable for yards or intermittent work, and not for long hauls or heavy grades. In catalogue No. 0223 this company has endeavored to answer all questions which are likely to arise when the purchase of an electro-locomotive is contemplated.

Feed water heaters is the subject discussed in a catalogue issued by James H. Paine, Broadway and Liberty street, New York city. It is a well-established principle of steam engineering that there is a saving made by each increase of 10 degrees in temperature of boiler-feed water. It is conceded that a great saving in the wear and tear of the boiler is effected by heating the water before introducing it to the hot surface, hence every effort is now made to utilize for this purpose the waste heat of the plant. The two great vents of escape for this waste heat are the stack gases and exhaust steam. The apparatus described in this catalogue has been designed to reclaim the waste heat from both sources.

WATCH THIS SPACE FOR OUR NUMEROUS SPECIALTIES.

WALWORTH MFG. CO. TOOLS and SUPPLIES for STEAM WATER and GAS USERS BOSTON MASS.

SOLE MANUFACTURERS OF THE FOLLOWING:

Stillson Pipe Wrench.
Walworth Die Plates.
Miller's Ratchet Die Plates.
"Huff and Tuff" Pipe Dies.
Hill's Solid Pipe Dies.
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Hall's Cast Iron Pipe Cutters.
Stanwood Pipe Cutters.
C. C. Walworth Pipe Cutters.
Stanwood 3 Wheel Pipe Cutters.
Miller's Ratchet Pipe Cutters.
Ashley Right or Left Nipple Holder.
Hall's Patent Pipe Reamers.
Walworth Heavy Vise, ⅛ to 6 in.
Klingfast Pipe Vise, ⅛ to 2 in.
Hall's Tapping Machines for Street Mains
Smith Friction Hand Tools.
Drill Stocks, Combination Socket Wrench with Drill Auger Bit, Screw Driver Stock, &c.
Taps, Reamers and Drills.

JOBBERS SELL THEM—IF YOURS DON'T, WRITE.

New York, Park Row Building. **WALWORTH MFG. CO.,** Boston, 128 Federal Street.

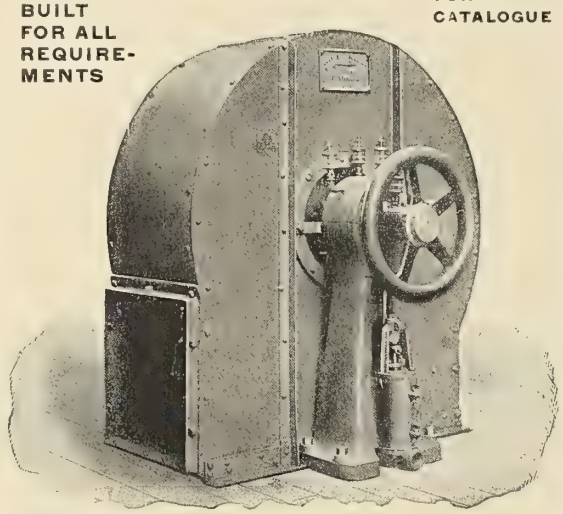
Write for our BLUE CATALOGUE "D" showing complete line of engineers' pipe fitting tools.

BUFFALO STEEL PLATE FANS

HEATING, VENTILATING AND FORCED DRAFT

SPECIAL DESIGNS BUILT FOR ALL REQUIREMENTS

SEND FOR CATALOGUE



BUFFALO FORGE COMPANY

BUFFALO, N. Y., U. S. A.

There is Only One Marine White, and that is

ZINC WHITE

All other whites change color and "go to pieces" very rapidly on exposure to marine conditions. Zinc White not only itself endures, but it preserves more sensitive pigments.

FREE: Our Practical Pamphlets:

"The Paint Question,"
"Paints in Architecture,"
"Specifications for Architects,"
"French Government Decrees."

THE NEW JERSEY ZINC CO.
11 BROADWAY
NEW YORK

The Nash Regulating Valve Company, Detroit, Mich., is mailing a very artistic catalogue descriptive of its temperature regulating device. The company solicits correspondence upon any point not clearly understood regarding this device.

U. S. metallic polish paste, made by George Wm. Hoffman, 295 East Washington street, Indianapolis, Ind., is spoken of in a leaflet issued by the maker. He claims many features for this polish, which is put in paste, liquid, and powdered form, and is fully guaranteed.

"From Steelton to Mandelay" is the title of a very handsome catalogue, 7 by 9 inches, bound in heavy paper, and issued by the Pennsylvania Steel Company, Steelton, Pa. It contains very attractive cuts and gives a short history of the construction of the Gokteik viaduct, built by the Pennsylvania Steel Company. This Gokteik viaduct is located in one of the Sham States of Upper Burma, and was built for the Burma Railways Company, Ltd. The contract was undertaken and executed under somewhat unusual circumstances, and this pictorial history of the enterprise is published in response to requests from many quarters.

Direct-current turbine dynamos are fully described in Bulletin No. 2, issued by the DeLaval Turbine Company 74 Cortlandt street, New York city. The company claims this to be the most ideal steam engine through its maximum simplicity of construction, at the same time acquiring the highest thermal efficiency while fulfilling every power requirement. The machines are mounted in such a way as to allow both turbine and generator bearings to run in the simplest manner, even though the machine may be out of line. All main bearings are self-oiling and the high-speed turbine bearings are oiled by means of a multiple tank oiler. Where a number of these machines are operated, waste pipes can be connected to filter the oil returned to the tank by means of a small pump. The catalogue, which will be sent on application, shows the various parts of the dynamos and gives full description as to construction of the plant.

Bulletin No. 29 of the Crocker-Wheeler Company, Ampere, N. J., is devoted to semi- and fully-enclosed motors, which are illustrated and fully described. This bulletin will prove very useful, as it contains much valuable information.

"A Short Story of the Life of Sir Joseph Whitworth," is the topic of the latest leaflet issued by Wyman and Gordon Co., Worcester, Mass. This company has issued a series of sketches of prominent mechanical engineers, and it is proposed to continue during 1903 the publication of these stories.

The Metropolitan Boat and Launch Company, Astoria, New York, is giving a very complete pamphlet to all lovers of boats as an advertisement of its product, and as a means of aiding the purchaser in making selections. The catalogue shows a handsome assortment of launches of all dimensions.

Modern tools adapted to modern conditions and demands in machine-shop practice are discussed in a leaflet issued by the American Tool Works, Cincinnati, O. The catalogue shows a most complete line of tools, including lathes, planers, crank shapers, upright drills, etc., which are neat in design. This leaflet will be sent to any one by communicating with the company.

CALENDARS RECEIVED.

Bullock Electric Manufacturing Company, Cincinnati, Ohio, a neat calendar which gives a picture of James Prescott Joule, with a brief sketch of his life.

Lucas Paint Company, Gibbsboro, N. J., a calendar in a delicate shade of green. A picture of Longfellow's home, Cambridge, Mass., is shown at the top, and on the back are printed extracts from the biography of the poet, etc.

Wilson and Silsby, Rowe's Wharf, Boston, Mass, have departed from their usual style in fitting the size of their calendar to a cut of the yacht *Quissett* on a canvas background. The calendar is suggestive and its originality gives it an unique position among the calendars of 1903.

Christensen Engineering Company, Milwaukee, Wis., a handsome calendar with a picture, "A Moonlight Sail" as the title.

William Bishop's Sons, 205 South street, New York city, a calendar showing a picture entitled "Joseph Jefferson—His Side Line."

Newhall Forge and Iron Works, 5-9 Murray street, New York city, an artistic calendar, printed on heavy paper. The picture at the top is in colors.

John A. Roebling's Sons Company, Trenton, N. J., a calendar giving a view of the new East River bridge. This company is furnishing all the wire cables used in its construction.

David Kahnweiler's Sons, 437 Pearl street, New York city, a calendar showing a picture entitled "To the Rescue," representing life savers going to the rescue of a disabled craft.

Fred H. Pell, 11 Broadway, New York city, a calendar which has a large picture at the top entitled "Heels Over Head," showing an enthusiastic crowd of small boys indulging in athletics.

The Universal Safety Tread Company, 45 Broadway, New York city, a calendar showing the Universal Safety Tread, which is used for ladder and treads on stairways, yachts, steamboats, etc.

Moran Towing Company, Tenth street, New York city, a calendar to which are attached cards for each month, giving time of high and low water at Sandy Hook, Governor's Island, and Hell Gate.

John W. Rapp, 311-327 East Ninety-fourth street, New York city, a calendar lithographed in several colors, showing patent fire-proof floors, arches, partitions, and metal-covered doors, shutters, etc.

Thomas B. Benton and Son, La Crosse, Wis., a calendar at the top of which is an engraving entitled "The Industrial South" and a brief reference to the electric machinery, gas engines, and launches which this firm manufactures.

The New Jersey Foundry and Machine Company, 5-9 Murray street, New York city, a handsome calendar showing a colored picture of two young people taking part in a Colonial dance. There is a sheet for each month. No business reference is in evidence.

The Standard Tool Company, Cleveland, Ohio, a calendar which contains tables giving diameter of drills in thousands of an inch for holes to be tapped, as well as giving the sizes of twist drills to be used in boring holes to be reamed with pipe reamer or threaded with pipe tap.

BUSINESS NOTES.

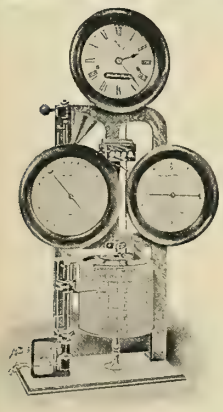
PHOENIX METAL.—The machinery in the new steamship *John B. Cowle,* built by the Jenks Shipbuilding Company, Port Huron, Mich., is fitted throughout with Phœnix metal made by the National Lead Company, 100 William street, New York city. This metal has given satisfaction on other lake steamers, among them being the steamship *Captain Thomas Wilson,* which is claimed to be the fastest freighter on the lakes.

NICHOLSON SHIP LOG.—A copy of the official report issued by the Chief, Bureau of Equipment, U. S. N., on the trial of the Nicholson ship log shows that it will prove satisfactory under most adverse conditions. Among the desirable features is that its accuracy is unaffected by the conditions of the sea and it is believed the log will not foul. In case of fouling, provision is made for clearing it by withdrawal of the tube. In regard to the high float-pipe required for vessels of low freeboard, which was mentioned as an undesirable feature, the builders state they have overcome this objection by experiment, and are now able to stow the pipes between decks on the fastest vessels of this class without reduction of delicacy in registration.

ASBESTOS HIGH-PRESSURE PACKING.—The H. W. Johns-Manville Company, 100 William street, New York city, is showing to any one interested a ring of wire insertion asbestos for high-pressure packing that was in constant use during its long service of 6 years; the packing, which was recently removed from the steam end of a Worthington duplex compound pump used in the elevator service of the Woodbridge Building, New York, never caused the engineer the slightest trouble. When removed it was in such excellent condition as to permit of further efficient service, notwithstanding its six years' use. The rod is still perfectly smooth. The packing worked under 125 pounds pressure, the pump capacity being 3,000,000 gallons every twenty-four hours.

FINE CATALOGUE FREE.—The Edson Manufacturing Company is compelled, because of the steady increase of its business in the manufacturing of steering gear and other marine appliances, to take larger quarters. The company is now located at 255 to 257 Atlantic avenue, Boston, Mass., and has a large machine and brass shop fully equipped with the most modern machinery and operated by workmen who have had years of experience in this particular line. The Edson steering gears are found on many of the finest yachts and ships afloat, and have for years been well known for rapidity and strength. This company was selected to design and build a wheel and gear for Emperor William's yacht, *The Meteor.* It has published an illustrated catalogue descriptive of this gear and it also gives the price list of different marine appliances.

SALAMANDERITE.—The salamanderite product which is being placed on the market by the H. W. Johns-Manville Company, 100 William street, New York, comprises fire- and water-proof sheets or panels in various thickness from 1-8 inch to 1-2 inch, finished on one side in exact facsimile of quartered oak, mahogany, maple, or any fancy cabinet woods, plain or in the finest marquetry and bas-relief effects. Salamanderite is adapted for use as a decorative covering for walls, ceilings, etc., of churches, theaters, public buildings, cabins and saloons of steamships, ballrooms, and booths at expositions; in fact, wherever a fire-proof substitute is desired for wood and the various inflammable materials heretofore used for these purposes. It can also be used in place of tiling. It is claimed that salamanderite is not only indestructible by fire, but prevents the spread of fire by circumscribing the area.



The Nicholson Perfected Ship Log.

WHITE STAR LINE.
DETROIT, MICH., Dec. 18, 1902.

NICHOLSON SHIP LOG CO., CLEVELAND, O.

Gentlemen:—As our year is just ending, have been summing up to get the worth of the different improvements we have installed in our passenger boats. The Nicholson Ship Log comes to us as one of the most important.

We have your logs in our steamers TASHMOO, GREYHOUND, CITY OF TOLEDO, and shall, before spring, install in our new steamer OWANA, another of your logs.

Although we do not use it particularly for the distance run, we do use it in regulating the speed of our vessels while approaching dangerous places or passing vessels, either in commission or at moorings. As your log works so rapidly, from the dial the Master in charge can determine in a moment just what speed he is passing the water. It is of great assistance to him and valuable to us to know that the speed is within the limits of the law. I really believe that all vessels should have one. When you are next in Detroit, drop in and we will arrange for installing a log in our steamer "OWANA." Yours truly,

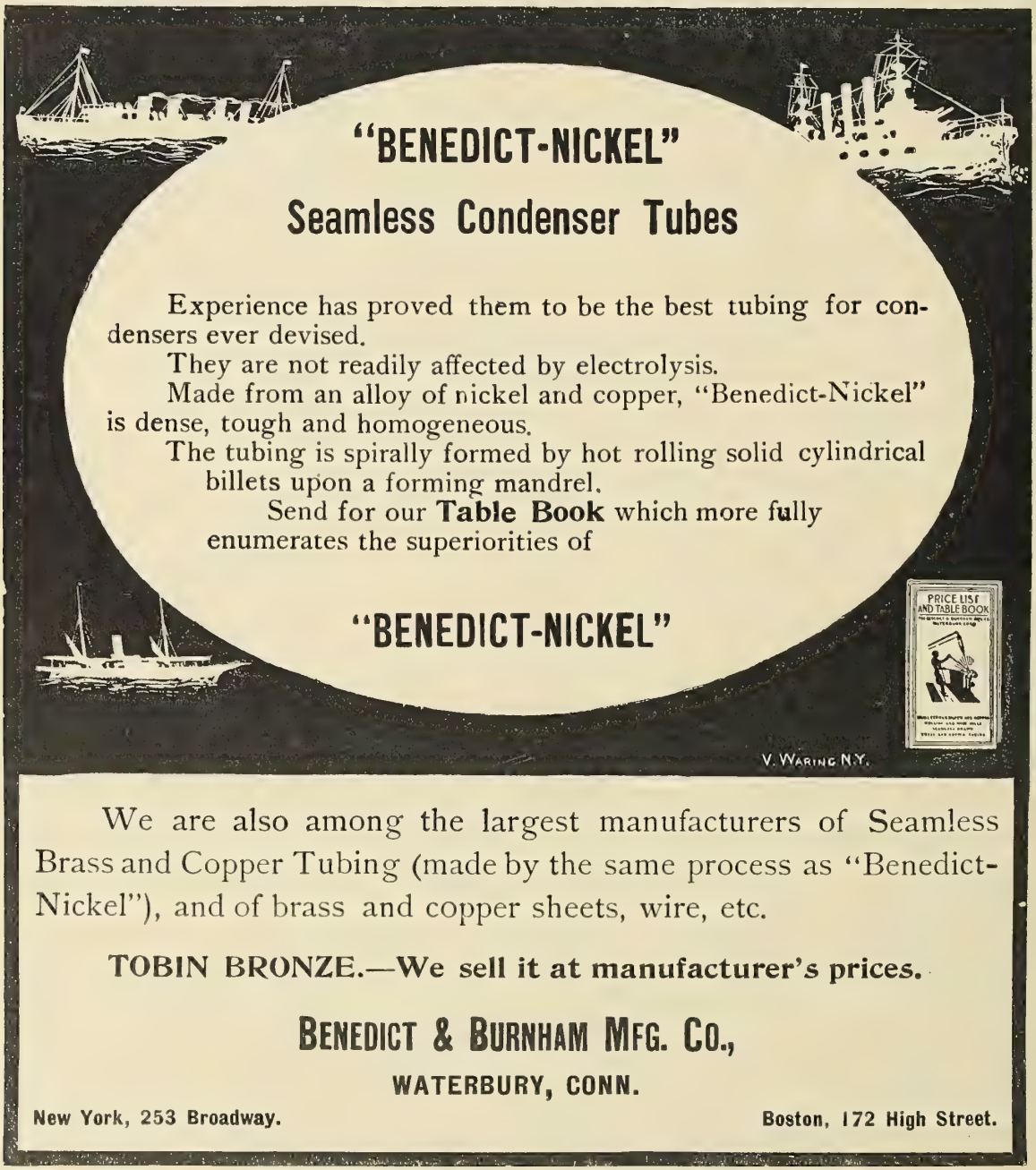
B. W. PARKER, General Manager.

CATALOGUES ON APPLICATION.

NICHOLSON SHIP LOG CO., 204 SUPERIOR STREET, CLEVELAND, O.

Half a Century in one Location.—John Lucas and Company, established fifty years ago by the late John Lucas, have now one of the leading paint manufacturing establishments in the United States. There has been nothing phenomenal in its growth, but under conservative but wise and capable management, each year has witnessed an increase in the company's business, so that to-day the position occupied by the house is an enviable one, as its products are known and sold in almost every State in the Union, while its export trade is large and yearly growing in importance. A recent convention of representatives held by this company for the purpose of reviewing the past season of work and making preparations and plans for the future has accomplished much good, and incidentally brought out a number of interesting facts. Some of these facts are: That the year just closed was one of the most successful in the history of the company, and that to meet a rapidly-growing demand for Lucas' products, manufacturing facilities must be increased by a substantial addition to the company's factories at Gibbsboro, N. J.

Orders for Sails.—Wilson & Silsby, Rowe's Wharf, Boston, Mass., are overflowing with orders, among the more recent ones being: T. W. Lawson, *Cygnet* suit sails; Arthur Binney, 50-foot auxiliary schooner for Major Bent; T. K. Lochroy, Jr., 25-footer; C. M. Hanley Co., 18-footer for R. J. Randolph; T. W. King, mainsail and jib for *Jacobin*; Captain Geo. Bailey, mainsail, Mannisquam, N. J., W. Amory Gardner, 90-footer; Cary Smith and Barbey, 90-footer auxiliary schooner for Albert C. Bostwick; L. B. Goodspeed, 18-footer; Cary Smith and Barbey, 90-footer auxiliary schooner for John W. Masury; Arthur Binney, 60-footer auxiliary schooner for E. W. Clarke, Jr.; C. C. Clapp, suit 18-footer; Geo. Lawley and Son Corp.,25-footer; Geo. Lawley and Son Corp., 35-footer; Geo. H. Whitman, mainsail and jib, 18-footer; D. B. Ogden, yawl suit of sails; A. C. Wheelwright, schooner *Hesper*, suit sails; J. A. Finley, mainsail 18-footer; S. N. Braman, 25-foot yawl suit sails; Tams, Lemoine and Crane, 19 suits for 18-foot Seawanhaka class.


"BENEDICT-NICKEL"
Seamless Condenser Tubes
Experience has proved them to be the best tubing for condensers ever devised.
They are not readily affected by electrolysis.
Made from an alloy of nickel and copper, "Benedict-Nickel" is dense, tough and homogeneous.
The tubing is spirally formed by hot rolling solid cylindrical billets upon a forming mandrel.
Send for our Table Book which more fully enumerates the superiorities of
"BENEDICT-NICKEL"
PRICE LIST AND TABLE BOOK
V. Waring N.Y.

We are also among the largest manufacturers of Seamless Brass and Copper Tubing (made by the same process as "Benedict-Nickel"), and of brass and copper sheets, wire, etc.

TOBIN BRONZE.—We sell it at manufacturer's prices.

BENEDICT & BURNHAM MFG. CO.,

WATERBURY, CONN.

New York, 253 Broadway. **Boston, 172 High Street.**

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1894.
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1894.
THE
McKIM GASKET
A profitable Gasket to buy because of its great durability.
Made of rubber encased in soft rolled copper—extra annealed—so that it will accommodate itself to faced or rough joints, and withstand abnormal pressure, temperature or circulation.
Made in all sizes for manhole, handhole and pipe fittings.
Write for Prices and Catalog.
McCORD & CO.
104 Broadway, - New York
1471 Old Colony Bldg., Chicago

A LARGE CONTRACT.—The Cleveland Punch and Shear Works Company, Cleveland, O., has secured an order from the Great Lakes Engineering Works, Detroit, Mich., for Cleveland tools to be installed in their new plant at Detroit, Mich. The contract calls for twenty-eight machines, consisting of Cleveland punches, shears, rolls, plate planers, radial drills, etc. The amount of the order aggregates about $50,000 and is one of the largest orders awarded for many months in this line.

A DISASTROUS FIRE.—The power-house of the Helena Light and Traction Company, Helena, Montana, has been completely destroyed by fire. Nearly all the machinery was also destroyed, the exception being a number of oil-insulated transformers, which were practically uninjured. Although the marble switchboard of the station was completely wrecked, there were found behind it three oil-insulated Westinghouse potential regulators in cast-iron cases, which were practically uninjured. The results of this fire have demonstrated that oil-insulated transformers are apparently immune to injury by fire.

LARGE ORDERS RECEIVED.—The Sprague Electric Company, 537 West Thirty-fourth street, New York city, has supplied a large amount of flexible metallic conduit and steel-armored conductors for the new addition to the White House, Washington, and has also received additional orders for ventilating devices in the same building.

GOOD PAINT.—John Lucas and Company, Gibbsboro, N. J., report a heavy demand for their paint, and in order to keep in closer touch with thousands of their customers they have published a small magazine under the title of "Good Paint," which has proven most successful, judging from the numerous letters of commendation they have received. In many instances, the letters were accompanied with substantial orders for their paint, which they claim possesses many good qualities, chiefly the way in which the paint retains its color under all conditions for a great length of time.

BALL JOINT UNIONS.—The Western Tube Company, Kewanee, Ill., reports a heavy demand for its brass and iron ground ball joint unions. The particular feature of the Eurema valve is briefly summed up as follows: Friction is reduced inasmuch as a straight passage is obtained through the seat, which is firmly and uniformly cast to the bridge of the valve, and is thus unaffected by unequal expansion so noticeable in the Globe valve. The stem of the valve inclines at the disk end toward the pressure, indicating correct position on pipe line, while it is necessary to look into a Globe valve to determine how it should be properly placed, consequently fitters have neglected to take this precaution and often put Globe valves on pipes improperly.

MARINE SURVEYORS AND SALVAGE OPERATORS.—Arthur Masters, W. Blackburn Smith, and Thomas Rutherford have organized, under the firm name of Masters, Smith and Rutherford, and opened an office at 29 Broadway, New York city, and will undertake the work of marine surveying and salvage operations. Their joint connection embraces a knowledge of ship and engine building and repair work, together with the various dry-docks on the Atlantic coast. They are open to engage in damage surveys or in the direction of salvage operations irrespective of locality or vessel. They also undertake the supervision of hulls and engines during construction, on owner's behalf, and shore superintendence of vessels where their number does not warrant the detention of the exclusive services of a practical supervisor.

LARGE ORDER FOR CHAIN.—An order has been secured by Mr. Ely Atwood, president and general manager of the Lebanon Chain Works, Lebanon, Pa., from the New York Shipbuilding Company, Camden, N. J., for forty-four pieces of 15 fathoms each 3 1-8 inch stud link anchor chain for vessels No. 5 and No. 6, now under construction at this shipbuilding plant. This chain is the second largest to be manufactured in this country, and will consist of 660 fathoms, weighing approximately 560 pounds to the fathom. The chain is subject to inspection and test, and will have to be of sufficient strength to meet the required working test of 215 1-4 gross tons. Notwithstanding the exceptional facilities for turning out large chains possessed by this plant, it will necessitate the operation of the works to their fullest capacity.

WESTON STANDARD PORTABLE DIRECT-READING

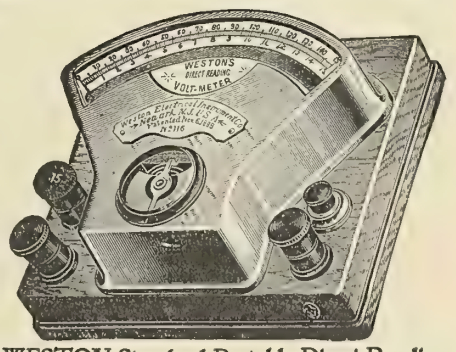
Voltmeters, Ammeters,

MILLIVOLTMETERS, VOLTAMMETERS, MILLIAMMETERS, OHMMETERS, PORTABLE GALVANOMETERS, GROUND DETECTORS, AND CIRCUIT TESTERS.

Our Portable Instruments are recognized as **the standard** the world over. Our **Voltmeters** and **Ammeters** are unsurpassed in point of extreme accuracy and lowest consumption of energy.

WESTON ELECTRICAL INSTRUMENT CO.,
Waverly Park, Newark, N. J., U. S. A.

BERLIN:—European Weston Electrical Instrument Co., Ritterstrasse 88.
LONDON:—Elliott Bros., 101 St. Martin's Lane.



WESTON Standard Portable Direct Reading Voltmeter.

Coppering Ships' Bottoms.—The new method of coppering ships' bottoms by applying pulverized copper on a heavy matrix with which all the ship's hull is painted, has received very general indorsement from the owners of vessels to which the process has been applied. The copper is insulated from the steel hull by first applying powdered quartz to the matrix. The quartz is then painted with another coating of the adhering material and the copper is applied. The process is known as the Coleman process, and is owned by the Coleman Ship-Coppering Company, Devonshire Building, Boston, Mass.

Technical Education for Wage-Earners.—The American School of Correspondence at Armour Institute of Technology, Chicago, Ill., gives courses by correspondence and means to extend its scope. It furnishes technical education to the wage-earning classes everywhere. The courses are especially practical and are adapted to the needs of people who are willing and anxious to advance. There is no entrance examination required in any of the correspondence courses, nor is there any age limit. Students to enter, however, must be able to read and write English, and should be able to devote at least three hours per week to their studies.

Steam Engine Indicator.—The Star improved steam engine indicator, manufactured exclusively by the Star Brass Manufacturing Company, 108 East Dedham street, Boston, Mass., is the outcome of careful study of indicator design and practice, and this company has endeavored to combine in the new instrument all the best features of the indicators which have preceded it, or such as have had a long period of successful service, at the same time introducing some points of special design. A noticeable feature to which attention is invited, is the means for unscrewing and removing the cap in the cylinder with the parts attached to it. The cap has a milled edge of the usual construction, but, unlike instruments of previous makes, the edge is protected by hard rubber non-conducting covering.

The Ideal Pigment

TRADEMARK FEROX REGISTERED JULY 8, 1902.

The only adequate protection for Ships, Bridges, Structural Iron and Steel Work

Mohawk Paint & Chemical Co.

SOLE MANUFACTURERS OF

Patent Iron Oxide Paints

98% Pure

19 Liberty Street, New York

The only **Pure** Iron Oxide Paint.
The only Non-Crystalline Oxide of Iron

Being porous and spongy it absorbs and retains the oil and makes a permanent, durable, unchanging, protective coating for wood and metals.

It is rust-proof and not subject to chemical action.
Unequalled for submarine use.

SEND FOR DESCRIPTIVE CIRCULAR

REMINGTON

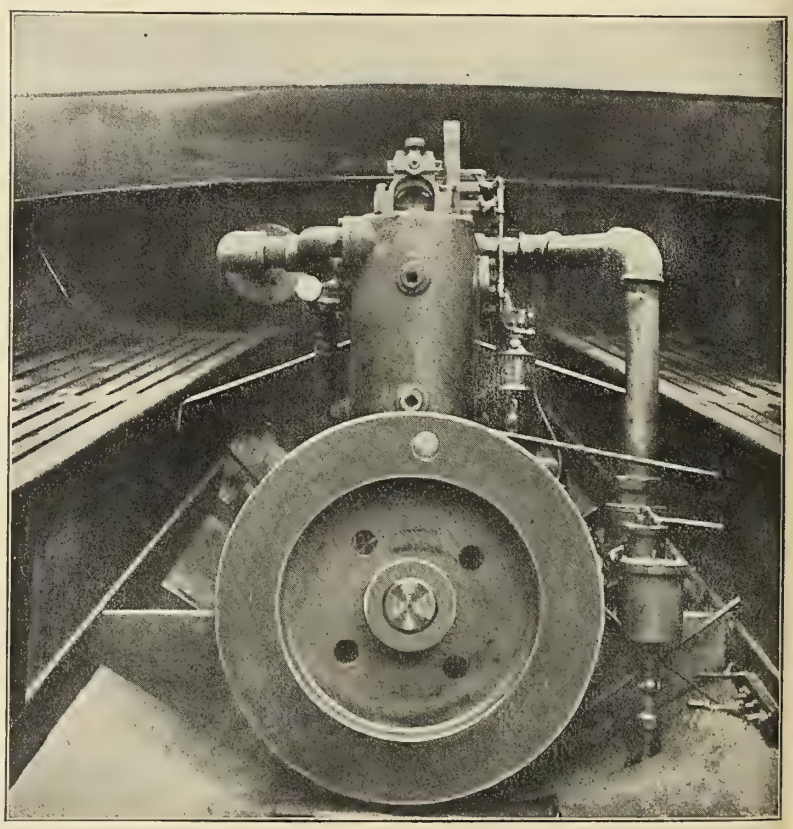
A Great Name
A Great Reputation
A Great Motor

2 Cylinder 4 Cycle Slow Speed

Write for prices now while we can fill your orders.

Remington Automobile & Motor Co.

UTICA, N. Y., U. S. A.



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" 2, George Averill, 296 Archwood Ave., Cleveland, O.
" 3, A. L. Jones, 289 Champlain St., Detroit, Mich.
" 4, Jas. A. Macauley, 5802 Indiana Ave., Chicago, Ill.
" 5, Otto Boettger, 1035 E. Hopkins Ave., Baltimore, Md.
" 6, John B. Arntzen, 1211 Monroe St., St. Louis, Mo.
" 7, P. S. Doyle, 253 Cumberland Ave., Portland, Me.
" 9, Wm. Bridges, 784 1-2 12th St., Milwaukee, Wis.
" 13, John B. Ambright, 2022 N. 11th St., Philadelphia, Pa.
" 15, U. J. Lewis, 333 Deloronde St., New Orleans, La.
" 17, Francis S. Neal, 4737 Section Ave., Norwood, O.
" 18, Wm. Hurst, 715 Walnut St., Cairo, Ill.
" 20, Jos. B. Barry, 206 Keel St., Memphis, Tenn.
" 23, W. R. Lewis, 213 East Front St., Jeffersonville, Ind.
" 24, Jos. B. Flach, 327 N. Fourth St., Paducah, Ky.
" 26, T. H. Kirkbride, 910 East Columbia St., Evansville, Ind.
" 27, L. C. Schwall, 518 S. Madison St., Bay City, Mich.
" 30, John W. Farrow, Box 88, Hoboken, Pa.
" 33, Geo. A. Kolb, 283 Hudson St., New York city.
" 35, Edward Brady, 113 Mission St., San Francisco, Cal.
" 36, Joseph Thomas, 57 Sea St., New Haven, Conn.
" 37, H. E. Beard, 1741 Huron St., Toledo, Ohio.
" 38, W. H. Collier, 73 Starr Boyd Building, Seattle, Wash.
" 39, Fred. J. Thompson, 138 W. 17th St., Erie, Pa.
" 40, S. P. Mallia, 1028 Market St., Galveston, Tex.
" 41. F. F. Smith, 224 Marquam Bldg., Portland, Ore.
" 42, Hy. J. Sloan, 810 Spearing St, Jacksonville, Fla.
" 43, Thos. J. Coyle, 627 Superior St., Port Huron, Mich.
" 44, George Layman, 274 Third Ave., Manistee, Mich.
" 45, Jas. A. Rourke, 708 East Bay St., Savannah, Ga.
" 46, D. W. Farrell, Clayton, N. Y.
" 47, Norman Raines, 804 East Spruce St., Sault Ste. Marie, Mich.
" 48, Carl V. Hart, 425 Perry St., Sandusky, O.
" 51, Henry S. Connell, 28 Yuba St., Muskegon, Mich.
" 53, Harry Stone, P. O. Box 445, Marine City, Mich.
" 55, Jas. W. Brown, P. O. Box 185, Cheboygan, Mich.
" 57, E. B. Meeker, 71 Abeel St., Kingston, N. Y.
" 58, E. Capers Haselden, P. O. Box 31, Georgetown, S. C.
" 59, Geo. F. Keating, 75 Webster St., E. Boston, Mass.
" 62, Nathan S. Lawrence, 30 Connecticut Ave., New London, Conn.
" 65, Thos. O'Keefe, 2 Trumbo St., Charleston, S. C.
" 67, Jas. K. Dole, Saugatuck, Mich.
" 70, Chas. T. Smith, 536 1-2 Commercial St., Astoria, Ore.
" 72, Thomas Navagh, 40 Lake St., Oswego, N. Y.
" 73, Ed. M. Donahue, 1308 Cherry St., Green Bay, Wis.
" 75, Frank D. Capron, Alexandria Bay, N. Y.
" 76, Orson Vanderhoef, Grand Haven, Mich.
" 77, John P. Hall, 1215 Huron St., Manitowoc, Wis.
" 78, F. A. Rehder, 29 W. Superior St., Duluth, Minn.
" 80, R. P. Cook, 46 Elm St., Albany, N. Y.
" 81, Jas. L. Sweeney, 204 E. Saragossa St., Pensacola, Fla.
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" 85, Samuel K. Kissack, 442 State St., Alpena, Mich.
" 86, Sherman A. Smith, 737 Menekannee Ave., Marinette, Wis.
" 87, Geo. B. Milne, 237 W. Canfield Ave., Detroit, Mich.
" 88, C. O. Chapman, S. B. Canal, Sturgeon Bay, Wis.
" 89, L. O. Willix, 89 Elizabeth St., Ogdensburg, N. Y.
" 91, Robert Davidson, 17 Fairfield Ave., Harbor Sta., Ashtabula, O.
" 92, H. E. McArthur, 16 Abstract Bldg., Saginaw, W. S., Mich.
" 93, M. E. Davis, M. T. & S. Co., 929 D St., N. W., Washington. D. C.
" 94, George R. Jones, Box 222, Washington, N. C.
" 95, P. J. McMahon, P. O. Box 199, Key West, Fla.
" 100, Thos. F. Sullivan, Honolulu, H. I.
" 101, Thos. J. Hanlon, Box 765, Norfolk, Va.
" 102, Fred W. Linsemeyer, 210 Clinton St., So. Haven, Mich.
" 103, A. E. Pittman, P. O. Box 378, Newbern, N. C.

TRADE PUBLICATIONS.

The Superior Gas Engine Works, West Superior, Wis., have issued a booklet setting forth many of the good qualities of their motors. They claim that these motors may be operated by persons without mechanical training, meeting the most severe conditions of service, and should commend themselves, not only to the uninitiated, but also to those having had experience with motors.

Patent Ejector Oil Burners is the subject matter treated in a catalogue now being distributed by the International Gas and Fuel Company, 185 Dearborn street, Chicago, Ill. This company contends that the success of its oil burner is because of the facility to thoroughly atomize the oil. This catalogue will be sent to any one interested in this subject by applying to the company.

The American Hoist and Derrick Company, St. Paul, Minn., has issued a most complete catalogue, 12 by 19 inches in size, devoted to contractors' and quarrymen's machinery. This company claims many points of superiority for its hoists, which include hoisting engines, hoists, derricks, locomotive cranes and elevators, wire rope and fittings, blocks, winches, etc. Any one desiring information may communicate with the company.

A Souvenir of an Inspection Trip of the new terminal of the North German Lloyd Steamship Company, Hoboken, N. J., made by the American Society of Civil Engineers, is issued by the Joseph Dixon Crucible Company, Jersey City, N. J., and shows the piers in the various stages of construction. All the bulkhead buildings are protected with Dixon's silica-graphite paint.

The Benton Marine Gasoline Engine, manufactured by Thomas P. Benton and Sons, La Crosse, Wis., is fully described in a catalogue now issued, wherein the firm makes many claims as to the merits of its engines, which are of the vertical and two-cycle type. These engines are thoroughly finished, both in the working parts and on the exterior. The oilers, valves, etc., are of polished brass. There are finished brass caps covering the tops of the cylinders on all the smaller sizes which are not water-jacketed.

The Port Huron Air Tool Company, Port Huron, Mich., has issued a catalogue pertaining to its compressed-air motors. The motor consists of two oscillating, double-acting cylinders set at right angles in an air-tight case. The motor is operated by a three-way valve and is kept perfectly tight by a stiffened back. Pistons are all automatic and every part of the motor is constructed with a view to durability and efficiency. The motors can be used upon traveling and jib cranes, winding drums, winches, and for drawing small engines. A catalogue is sent to any one communicating with the company.

Marine Gasoline Engines and Complete Launches is the subject of a catalogue issued by the marine department of the Union Iron Works, Oshkosh, Wis. These engines, it is said, require no licensed engineer; ignition points are located where the mixture is drawn into the cylinder and will expel all the gasoline vapor. The bearings are made of hard brass; the crank shaft and connecting rods of steel, the cylinder and valve mechanisms are water-jacketed to prevent over-heating, and the oil mechanism is of the automatic sight-feed oiler type. This catalogue contains many cuts showing the many types of boats this company constructs.

Heating and Ventilation as applied to manufacturing establishments are discussed in a catalogue being distributed by the American Blower Company, Detroit, Mich. This company claims that the A B C fan system is adapted to the heating of every class of large building. The heater coil is arranged to use live and exhaust steam at the same time or either all live or all exhaust, as desired. Owing to the construction of the coil, exhaust steam may be turned into it without appreciable back pressure of the engine. In case an engine is used to run a fan a separate section is provided for the exhaust steam from it, so that the operation of the fan costs practically nothing. Correspondence with this company will promptly bring detailed information.

When writing to advertisers please refer to Marine Engineering.

"The Sign of a Preservative" is the title of a catalogue issued by the Arlington Manufacturing Company, Canton, Ohio. This company uses this catalogue as a medium through which to call attention to the merits of the Arlington composition for use in boilers. It is claimed to preserve steam boilers from incrustation scale, corrosion, or pitting.

The Truscott Boat Manufacturing Company, St. Joseph, Mich., is mailing a very complete catalogue, the contents of which cannot fail to be of interest, showing as it does a full line of marine motors. This company contends that in the construction of launches and motors is to be found a practical assemblage of good ideas of experienced designers. Cuts are shown in this catalogue of the many sizes of motors built by this concern, and full information will be sent regarding them to any one communicating with the company.

The H. W. Johns-Manville Manufacturing Company, 100 William street, New York city, N. Y., is issuing a catalogue describing the electrotherm current, which is an electrical substitute for hot-water bags and does not require the watchful care and the constant renewals of the applications to obtain the best effects, the current entirely abolishing the former necessity for disturbing the patient or subjecting him to the discomfort of frequent extremes of temperature.

"A Combination of Two Old Concerns" is the title of a book issued by Falkenau and Sinclair, 109-115 North Twenty-second street, Philadelphia, Pa. This firm states that it is prepared to do anything in the line of testing machines and sheet-metal working machinery. Besides doing a general engineering business it develops designs from plans submitted, furnishes the necessary engineering and drafting talent, and after having made the exact working drawings will produce the desired specialty on a manufacturer's basis if desired.

Yacht and Marine Plumbing Specialties are described in a catalogue issued by Alfred B. Sands and Son, 134 Beekman street, New York city. This is a 63-page catalogue, handsomely got up, and illustrating a full line of pumps for tanks, bilge, deck, bath, and galley, etc.; also a complete line of closets, both pump and siphon, as well as folding lavatories in various styles. It also shows a line of low-rimmed porcelain lavatories, bath tubs, soap cups, tumbler holders, tooth brush holders, towel bars, etc. A copy of this catalogue will be sent to any one upon request.

Wood-working machinery is fully discussed in an unusually handsome catalogue, 8 by 10 inches, issued by the H. B. Smith Machine Company, Smithville, N. J. This company submits the catalogue to represent the different machines which it manufactures. It uses engravings extensively for the reason that they show the machines exactly as they appear in the testing rooms. There are from two to ten views of a machine, in order to show it from all sides and in all of its details. These photographs are 10 by 18 inches, and, being of such a size and in such numbers, enable a prospective purchaser to study the machine in a thorough and intelligent manner.

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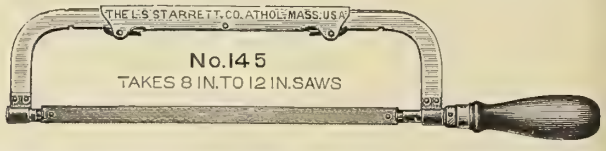

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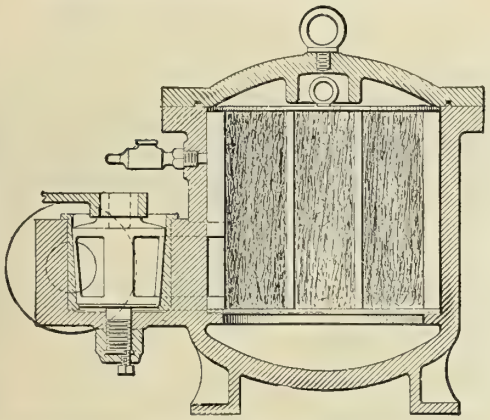

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A Short Story of Benjamin Franklin is published by Wyman and Gordon, Worcester, Mass. The publishers of this pamphlet make forgings of all kinds, one of their specialties being crank forgings through a process of treatment by heating which increases the tensile strength of steel.

Roller bearings are discussed in a catalogue presented by the Mossberg and Granville Manufacturing Company, Providence, R. I. The contents of this catalogue will be of great interest to users of power, as it fully describes and illustrates the general application of roller bearings, which they claim will stand under every necessary condition of application, and will do away with the skeptical view of the roller bearings held by many mechanical engineers. Many letters are reproduced in the catalogue which are very complimentary to the Mossberg and Granville Company. Requests for any information will be granted.

The launches manufactured by the Pearson Boat Construction Company, Duluth, Minn., are fully described in a catalogue recently issued by this company, wherein many pictures are shown giving an excellent idea of the type of boats constructed by this company. The models combine ideas based on an experience of thirty years in the construction of small craft. The demands for launches from these models have so increased that it has been found necessary to enlarge the plant to double that of last year's capacity. This catalogue is mailed to any one interested in boats.

Punching and shearing machines are fully explained in a catalogue issued by Henry Pels and Company, 66-68 Broad street, New York, manufacturers and patentees of Werner's and John's patent punch and shear machines. The claims of these machines are that they meet the demand for tools of great capacity. The machines are made of wrought iron and steel, and may be left uncovered in the open air. Their weight is very small compared with cast-iron machines, and they can be easily moved by mounting on wheels. These machines are constructed for punching webs as well as flanges for channels, etc., the surfaces of the beams cut with these machines being smooth and the sections not damaged.

"The Keller Pneumatic Tampers," for use on copper converters and steel converters, is the subject of a leaflet issued by the Philadelphia Pneumatic Tool Company, Philadelphia, Pa. The pneumatic tampers or rammers illustrated and described were designed by this company for foundry purposes and for tamping concretes and clay. This company is also issuing a booklet devoted to the care and use of pneumatic tools, wherein it states that too much attention cannot be paid to a thorough cleaning of all pneumatic tools, and that no other class of machines gives such returns for care. These tools are necessary to a high-grade of workmanship, and while they are also for rough work, they should receive the best of care in order to keep them in good working condition. This book will prove valuable to those having to do with pneumatic tools, and this, as well as the catalogue pertaining to tampers, will be mailed by applying to the company.

WATCH THIS SPACE FOR OUR NUMEROUS SPECIALTIES.

WALWORTH MFG. CO. TOOLS and SUPPLIES for STEAM WATER and GAS USERS BOSTON MASS.

COMPARE WALWORTH WEIGHTS With the Weights of Valves You Have Been Using.

ONE INCH BRASS VALVE WEIGHTS

Globe, Jenkins Disc	58 oz.
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Gate, Extra Heavy	74¼ oz.

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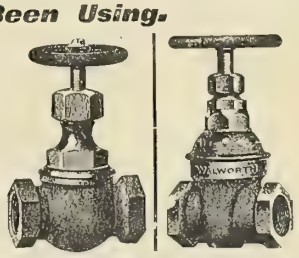

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New York, Park Row Building. **WALWORTH MFG. CO.,** Boston, 128 Federal Street.

Write for our BLUE CATALOGUE "D." showing complete line of engineers' pipe fitting tools.

The William T. Johnston Company, Cincinnati, Ohio, has issued a very attractive catalogue, containing 800 pages, dealing with supplies and machinery for railroads, mills, mines, steamboats, engineers, and contractors. The information this book contains will be of much value for reference.

"Plain Milling Machines" is the title of a book issued by the Garvin Machine Company, Spring and Varick streets, New York city. This catalogue is issued in order to keep customers in touch with the latest improvements in this line. The company has also issued a series of catalogues which include universal milling machines, vertical milling machines, screw machines, turret screw machines, duplex drill lathes, hand lathes, and spring coils.

Randolph Brandt, 38 Cortlandt street, New York city, N. Y., has issued a catalogue describing his packing, gaskets, belting, engineers' and mill supplies. It is not intended to cover the entire list of goods handled by him, but he is in a position to furnish anything that is required to supply engineers on steamships and in factories at reasonable prices. By communicating with him full information will be given concerning any specialty which he handles.

The Crocker-Wheeler Company, manufacturers and electrical engineers, Ampere, N. J., issues frequent bulletins describing the several specialties of this company, each bulletin being complete in itself. Among those just received are number 54, devoted to countershaft motors; number 32, motor-driven linotype machines; number 53, motor-driven compressors; number 33, motors for elevator duty. Copies of any or all of these bulletins can be procured on application.

The Keuffel and Esser Company, 127 Fulton street, New York city, N. Y., is distributing a complete catalogue of 500 pages which is devoted to drawing materials and surveying instruments. Since the publication of the thirty-first edition of this catalogue the company has largely added to its factory and has more than doubled the capacity in space and facilities. The views of the factory, together with several cuts of the interior distributed through this book, will give a good idea of the improvements.

Roller and ball bearings are very fully described and well illustrated in a catalogue now being distributed by the Bantam Manufacturing Company, Bantam, Conn. W. S. Rogers is general manager of this company, and his many years of experience in this special field make it possible for him to emphasize the points in connection with these bearings which purchasers would most want to know, whether bearings are wanted for thrust purposes or for any other uses. A careful examination of this catalogue would be very instructive. Copies can be had free upon application to the company.

Steam Turbines are thoroughly discussed in a catalogue issued by the De Laval Steam Turbine Company, 74 Cortlandt street, New York city. In this catalogue many pictures are to be seen showing the motors for different purposes. They are simple in construction. The wearing parts are few, being practically limited to the bearings, which are claimed to be of the simples construction. All the moving parts are made changeable, and, therefore, can be quickly replaced in case renewals of parts are required. Information regarding these turbines will be sent to any one interested in this subject.

"The Steam Turbine and Its Commercial Aspect" is the title of a paper presented at the twenty-first annual meeting of the American Railway Association, Detroit, Mich. The reprint goes minutely into details of the steam turbine, and inquiries have been made as to the possibility of its application, as well as what may be the controlling features of its commercial value, and to determine whether the steam turbine subjected to a careful analysis is a machine still to be developed or whether its advantages have been proved. A copy of this paper will be sent to any one interested in steam turbines by communicating with the Westinghouse, Church, Kerr and Company, Maritime Building, New York city.

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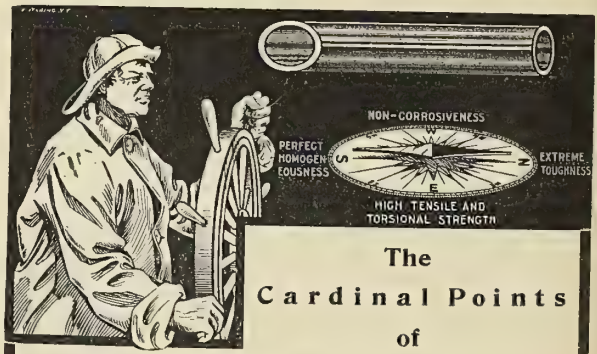

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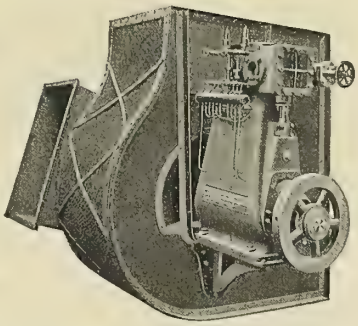

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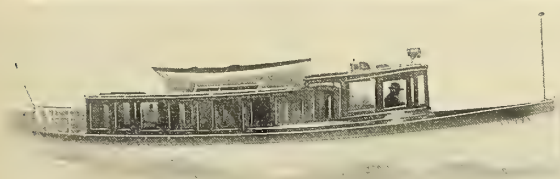

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Launch "BETTY," one of the most satisfactory cruising launches ever built! Has been all over the Great Lakes. Launched in August, 1901, is 40 ft. over all, 8 ft. beam, is full cabined, including pilot house, main cabin, toilet room with Sands closet, Galley with ice box, clothes closet, and engine room. Has 14 H. P. four-cycle, 2-cylinder gasoline engine. Will make 9 miles an hour all day long. A 12 ft. tender is carried on top. Inventory includes Acetylene Searchlight, 100 lb. folding anchor, side lights, lanterns, carpet, bedding, dishes, etc. Will sell at a low price to quick purchaser, as am building larger boat. Address J. B. STRAWBRIDGE, Cumberland, Md.

Alfred B. Sands and Son, 134 Beekman street, New York city, N. Y., are distributing a calendar, 12 by 17 inches, upon which is a large cut showing a full-rigged schooner.

The Lozier Motor Company, Plattsburg, N. Y., has issued a leaflet showing many cuts of launches, from a 1 1-2 horse-power yacht tender to a 50-foot full-cabin cruiser, all very neat in design. This company claims that the application of new and original ideas of design and construction of motor devices has enabled it to produce a marine motor which is free from the well-known defects found in old-style engines with their antiquated attachments. This company solicits correspondence upon matters pertaining to motors and will send catalogue, designs, and specifications on request.

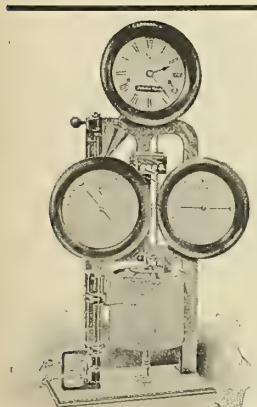
"The Counsellor" is the name of a new quarterly which is published by Clarence P. Day, 140 Nassau street, New York. The January issue is No. 1 of Volume I. It is one of the most beautifully printed publications we have ever seen. Its purpose is co-operation in the development of technical and trade advertising. Any man who has to do with the handling of advertising cannot fail to be much benefited by a careful study of the articles published, as they are devoted to subjects of a practical nature. In addition to the reading matter there is a directory of the leading papers in the technical field. The subscription price is one dollar a year.

BUSINESS NOTES.

AIR PORTS.—The Delaware Marine Supply Manufacturing Company, Wilmington, Del., has received an order from the George Lawley and Sons' Corporation, South Boston, Mass., for all the air ports to be used on the new steam yacht *Calumet,* now building by the latter company from designs by A. S. Chesebrough. These air ports, and other ship hardware, have been ordered also by several other shipbuilders and naval architects.

A GOOD CONTRACT.—James H. Paine and Son, engineers, builders, and machinists, Boston, Mass., report business as being very good. Among their recent orders was one for supplying the machinery for an oyster steamer, consisting of one of their latest design compound engines, with all auxiliary machinery installed in the boat. These new orders and other work on hand will keep their shop on the rush for some time. They are now contemplating moving into larger quarters during the early summer.

LARGE ORDERS FOR SAILS.—Wilson and Silsby, Rowe's Wharf, Boston, Mass., report a large number of orders on their books, among which are contracts to supply a suit of sails for a 90-footer, and a 120-foot schooner being built by Cary Smith and Barbey; also for the *Hadassah* for David B. Ogden; a suit of sails for a 50-foot auxiliary boat for Arthur Binney; also for a 90-foot auxiliary yacht for W. Amory Gardner, and for the defender of the cup of Italy, for the Duke of Abruzzi. They also have other contracts for supplying yachts and racers.



The Nicholson Perfected Ship Log.

WHITE STAR LINE. DETROIT, MICH., Dec. 18, 1902.

NICHOLSON SHIP LOG CO., CLEVELAND, O.

Gentlemen:—As our year is just ending, have been summing up to get the worth of the different improvements we have installed in our passenger boats. The Nicholson Ship Log comes to us as one of the most important.

We have your logs in our steamers TASHMOO, GREYHOUND, CITY OF TOLEDO, and shall, before spring, install in our new steamer OWANA, another of your logs.

Although we do not use it particularly for the distance run, we do use it in regulating the speed of our vessels while approaching dangerous places or passing vessels, either in commission or at moorings. As your log works so rapidly, from the dial the Master in charge can determine in a moment just what speed he is passing the water. It is of great assistance to him and valuable to us to know that the speed is within the limits of the law. I really believe that all vessels should have one. When you are next in Detroit, drop in and we will arrange for installing a log in our steamer "OWANA." Yours truly,

B. W. PARKER, General Manager.

Eastern Agents, H. E. DANTZEBECHER & CO., The Bourse, Machinery Dept., Philadelphia, Pa.
Pacific Coast Agent, W. H. PIERSON, 421 Market Street, San Francisco, Cal.

Catalogues on Application. NICHOLSON SHIP LOG CO., 204 SUPERIOR STREET, CLEVELAND, O.

The Philadelphia Bourse.—In the exhibition department of The Bourse, Philadelphia, Pa., any prospective purchaser can accomplish more in several hours or a day than is possible to do in a week or more in the old way of visiting each manufacturer at his works. Here are exhibits showing lines of the machinery and other manufactures.

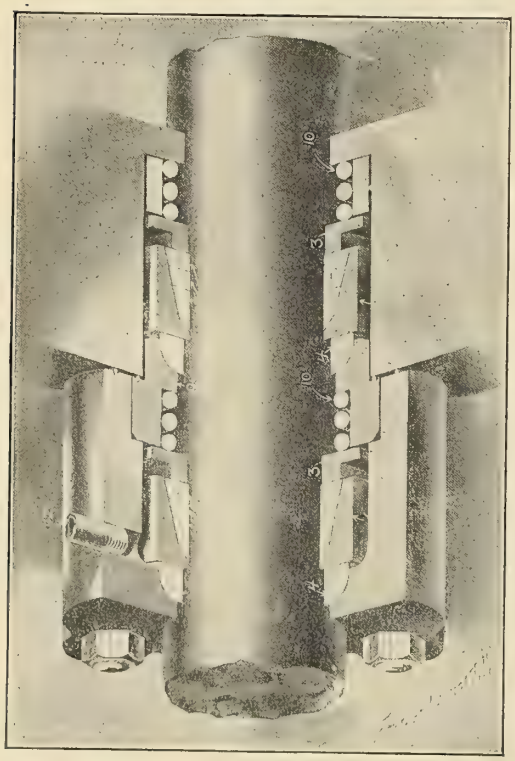
Roller Bearings, Sheaves, and Bushings.—The American Construction Company, 255 Atlantic avenue, Boston, Mass., is putting on the market improved roller-bearing sheave bushings which have long bearings, the long rollers being the extreme thickness of the sheave. The rollers are grooved and arranged astride an interior roll, being kept apart by roller separators. The rollers and separators are held in position within the sheath or bushings by a ring which can be easily removed and replaced when desired, thus affording simple means of making repairs. It will be observed that by this construction all pivotal parts for holding the rollers within the sheath or bushings are entirely dispensed with.

Samples Free.—The Keuffel and Esser Company, 127 Fulton street, New York city, is mailing free samples of the Janus transparent tracing paper to all inquirers. This paper will print like tracing paper on cloth, thereby saving the trouble, expense, time, and possibility of error involved in making tracings. It is a high-grade paper with a fine surface and good body. It is adapted for ink, pencil, and brush work.

Smalley Gas Engines.—The Smalley Motor Company, Ltd., Bay City, Mich., has purchased of Smalley Brothers and Company all that portion of the latter's business which pertains to the manufacture and sale of marine gasoline engines, including the entire equipment of machinery, stock on hand, patents, and good-will. This company will carry out all contracts made by Smalley Brothers and Company for finishing gasoline engines and other accessories. The organization will continue the manufacture of marine gasoline engines at the plant of Smalley Brothers and Company, Ltd., until the new plant of the company is completed, which will be modern in every respect and practically fire-proof.

Your Engine May Be Out of Line.

There may be a good deal of play between crosshead and guides or between piston and cylinder, but the stuffing box will always be tight when



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THE

McKIM GASKET

A profitable Gasket to buy because of its great durability.

Made of rubber encased in soft rolled copper—extra annealed—so that it will accommodate itself to faced or rough joints, and withstand abnormal pressure, temperature or circulation.

Made in all sizes for manhole, handhole and pipe fittings.

Write for Prices and Catalog.

McCORD & CO.

104 Broadway, - New York
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Ball-Bearing Company.—The Ball-Bearing Company, formerly of Boston, Mass., is now located at 2322 Market street, Philadelphia, Pa. This company announces that it is the only concern formerly located in Boston and that did business under the name of the Ball-Bearing Company of Massachusetts.

New Firm of Naval Architects.—Messrs. Liljegren and Clark have opened an office at 45 Broadway, New York, as naval architects, mechanical and marine engineers. The firm will make a specialty of the best classes of vessels, and are prepared to furnish drawings and specifications of anything, from a liner to a coal barge. Both members of the firm are entering the field with much practical experience. Mr. Liljegren received his theoretical training at the Royal Naval and Engineering Institution of Sweden. Since his graduation he has been connected with the Newport News Shipbuilding and Dry-Dock Company, the New York Shipbuilding Company, etc. Mr. Clark since finishing his education at Cornell University and at the University of Glasgow has had experience in the designing of ships in some of our leading shipyards.

Orders for American Blowers.—The blowers for the United States ship *Yankee,* under construction at the League Island Navy Yard, are being built by the American Blower Company, Detroit, Mich. They will be operated by direct-connected motors.

More Commodious Quarters.—Mr. R. L. Newman desires to announce that, owing to the great development of his business his present accommodations are altogether inadequate, consequently he has secured a larger suite of offices on the ninth floor of the Chesebrough Building, New York city. He will have at the disposal of his many clients a corps of draftsmen.

The Carley Life Float.—The models of the Carley life float which were exhibited at the annual convention of the Lake Carriers' Association, held recently in the Cadillac Hotel, Detroit, Mich., by F. T. Parks, manager of the Carley Life Float Company, Produce Exchange, New York, created much favorable comment among steamship men who attended the convention. Several important contracts were signed and many orders have been received at the company's various offices, while other business has been promised with the lake men. Orders are also pending for the equipment of two large shipping lines in the East. Yachtsmen are also sending in orders.

More Commodious Offices.—The Philadelphia Pneumatic Tool Company, Philadelphia, Pa., has arranged to double the size of its offices in New York by renting additional room in the Singer Building, corner Broadway and Liberty street. This is made necessary by the greatly-increased business of this company in and around New York city. An electrical-driven air compressor and a complete plant for testing and exhibiting pneumatic tools of all kinds in operation will be installed. We are advised that a decision favorable to this company has been rendered by the United States Circuit Court, by which it is allowed to continue making and selling the Keller rotary drills. Judge Lacombe suspended the injunction granted against the Keller drills, which were alleged to infringe, and so removed all restriction of the sale by this company of these well-known drills.

The Logic of It.—It is, perhaps, peculiarly human that we are always trying to find values without cost. The word bargain is so thoroughly accentuated in our vocabulary that it is associated with low price. Sometimes we buy a belt at a price less than the cost of the raw material that goes into a first-class quality belt. We imagine we are securing a bargain, whereas we are buying something that is not only the full price for the quality given, but also acts as a boomerang in the shape of time, of help, machinery, and power lost. The Graton and Knight Manufacturing Company, Worcester, Mass., has been oak leather tanners for fifty years and offers its "Little Worcester" and "Heart" brand belts as highest in initial cost and lowest in operative cost. These belts are guaranteed accordingly, and any user may test them, and if not found to be the most economical belt-power transmitters, they can be returned free of expense.

WESTON STANDARD PORTABLE DIRECT-READING

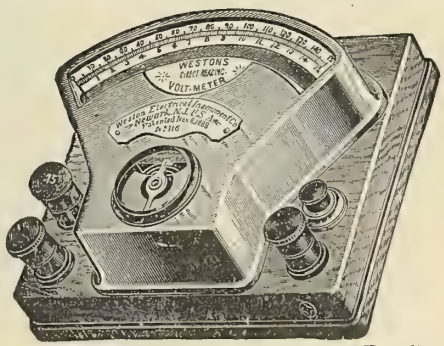
Voltmeters, Ammeters,

MILLIVOLTMETERS, VOLTAMMETERS, MILLIAMMETERS, OHMMETERS, PORTABLE GALVANOMETERS, GROUND DETECTORS, AND CIRCUIT TESTERS.

Our Portable Instruments are recognized as **the standard** the world over. Our **Voltmeters** and **Ammeters** are unsurpassed in point of extreme accuracy and lowest consumption of energy.

WESTON ELECTRICAL INSTRUMENT CO.,
Waverly Park, Newark, N. J., U. S. A.

BERLIN:—European Weston Electrical Instrument Co., Ritterstrasse 88.
LONDON:—Elliott Bros., 101 St. Martin's Lane.



WESTON Standard Portable Direct Reading Voltmeter.

German Shipbuilding.—The Flensburger Schiffbau Gesellschaft, Flensburg, has just closed a contract with the Deutsche Dampfschiffahrt for a large steamer of about 6,500 tons capacity, which makes a total of fourteen steamers of 42,300 tons under contract by this company, of which seven are seagoing ships.

Patents Sustained.—Judge Coxe has handed down a favorable decision in a suit of the Weston Electrical Instrument Company, Waverly Park, Newark, N. J. This company claims that Mr. Weston was among the first to construct a commercial instrument for the measurement of alternating currents of electricity and that the defendant appropriated that instrument. The Court was not disposed to deprive the inventor of the fruits of his work by subjecting the patent to harsh and technical rules of construction.

Consolidation of Two Well-Known Companies.—The Railway Appliance Company, Chicago, Ill., and the Q and C Company, also of Chicago, announce to their customers and friends that they are now consolidated and conducted under the name of the Railway Appliance Company, with a larger line of specialties and increased facilities, thus enabling them to supply their former customers and many new ones more satisfactorily than ever before. The employees heretofore connected with the Q and C Company will be retained in the new company.

Substituting Alternating Current Power.—The Ohio Brass Company has decided to substitute alternating current power distribution for the direct-current system at present in use in its shops at Mansfield, Ohio. A recent purchase from the Westinghouse Manufacturing Company, Pittsburg, Pa., comprised 180 kilowatt power, 7,200 alternations, two-phase alternator, a direct-current exciter, switchboard equipment, and the following induction motors: two 40 horse power, four 30 horse power, one 20 horse power, one 15 horse power, and one 2 horse power. This appartus is to provide increased capacity as well as to replace direct-current machinery.

The Ideal Pigment

TRADEMARK FEROX REGISTERED JULY 8, 1902.

The only adequate protection for Ships, Bridges, Structural Iron and Steel Work

Mohawk Paint & Chemical Co.

SOLE MANUFACTURERS OF

Patent Iron Oxide Paints

98% Pure

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The only **Pure** Iron Oxide Paint.
The only Non-Crystalline Oxide of Iron

Being porous and spongy it absorbs and retains the oil and makes a permanent, durable, unchanging, protective coating for wood and metals.

It is rust-proof and not subject to chemical action.
Unequalled for submarine use.

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A Great Name
A Great Reputation
A Great Motor

2 Cylinder 4 Cycle Slow Speed

Write for prices now while we can fill your orders.

Remington Automobile & Motor Co.

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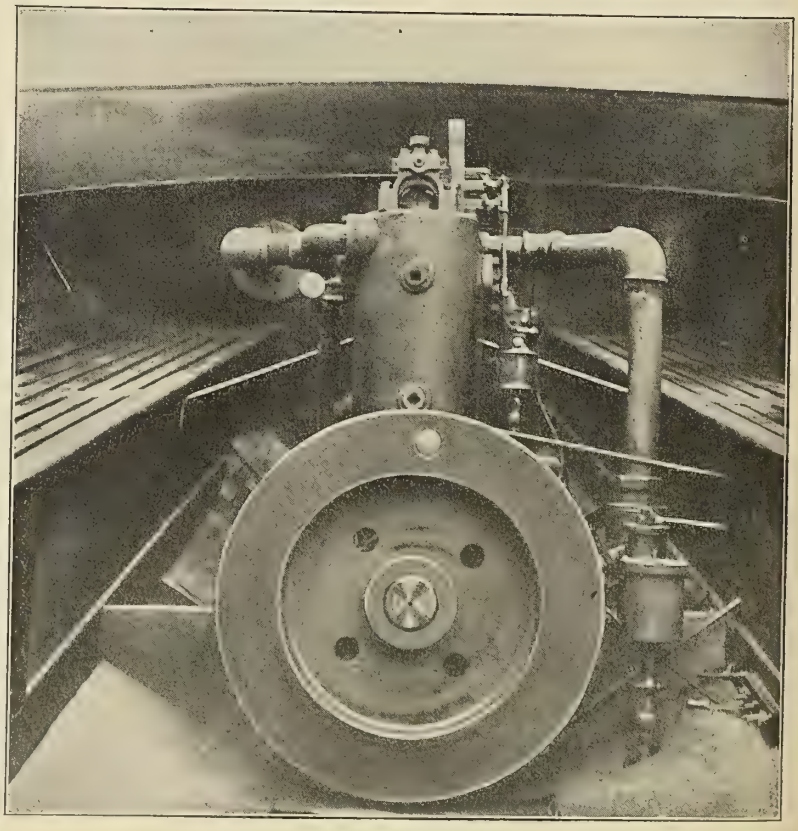


SPECIAL NOTICES.

Announcements under this heading will be inserted at the uniform rate of thirty-three-and-a-third cents a line. Lines average ten words each.

GENERAL MARINE MACHINIST

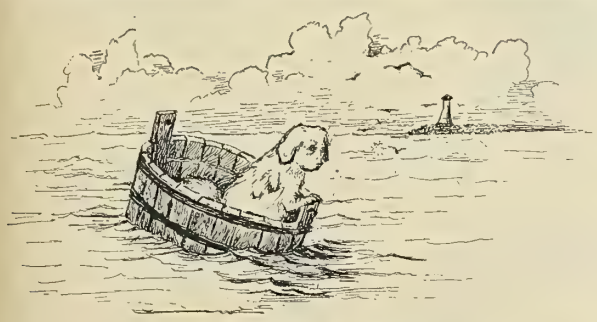
desires a change from present position. All-round man; Assistant to Superintendent in Works, or Installing. Seventeen years' experience. Age 35. Address X C, care Marine Engineering, 309 Broadway, New York.

SUPERINTENDING ENGINEER.

Young Superintending Engineer, technical graduate, desires change of position. Experienced in design, construction, and maintenance of vessels and machinery. Address MARINE ENGINEER, care Marine Engineering.

EXPERIENCED SHIPBUILDER SEEKS POSITION.

An Experienced Shipbuilder of 20 years' experience in large shipyards on the Atlantic Coast, seeks a position as loftsman, framing and regulating or general charge. Permanent position desired. Address SHIPBUILDER, care of Marine Engineering.



A BARK AT SEA.

New Information Bureaus.—To boom pleasure and health resorts along the New York Central and associated lines, and thereby increase the earnings of his department, George H. Daniels, general passenger agent of the Central, has installed information bureaus throughout the country. The function of these bureaus is to convey information concerning the Central and the pleasure resorts, and also to sell tickets to any one who may wish to buy.

Phoenix Metal Bearings.—In writing recently to Mr. D. E. Lynn, general marine sales agent of the National Lead Company, 100 William street, New York city, the Jenks Shipbuilding Company, Port Huron, Mich., stated: "We have put Phœnix metal into the main journals, thrust bearings, and crank-pin boxes of the steamers *Capt. Thomas Wilson, Kennebec, Chas. S. Neff, Henry Steinbrenner, and Kanawha.* We are also putting it into the engines of the United States lighthouse tender *Hyacinth* and the steamer *John B. Cowle,* which are to go out later. The steamers *Wilson, Steinbrenner,* and *Cowle* are 440 feet long and have a capacity of about 6,300 gross tons. The steamer *Wilson,* the past season, has beaten every steamer she has come across, but she did not meet the *Steinbrenner,* as the latter vessel made only one trip last fall, and when she meets the *Steinbrenner* this year the Phœnix metal will no doubt either be thrown out of the journals or have a pretty good record when they get through, as the *Steinbrenner* on her maiden trip last season made fourteen miles per hour between Detour Light and Thunder Bay Light, loaded with 6,200 gross tons of ore. We have yet to hear the first complaint of this metal, and until we do we shall continue to use it in all of our large engines, and we can cheerfully recommend it to anybody who wants a first-class metal. You can use this letter as you see fit, and we shall be pleased to answer any inquiries of any of your prospective customers who feel disposed to write us."

Cabins and Staterooms

of modern vessels especially those in the passenger service should demonstrate the supreme possibilities of the wood finisher's art.

This demands a special varnish, however, as atmospheric conditions are more destructive to varnish afloat than ashore and the ordinary article is of but little use.

The varnish best adapted to withstand the deleterious influences of wind, wave and weather is

Berry Brothers' Spar Varnish.

Further particulars and a unique marine puzzle sent free for the asking. Write us.

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Factory and Main Office, DETROIT.

Vessels Classified.—The American Bureau of Shipping, 66 Beaver street, New York city, reports, among other vessels recently classified by this bureau, the following: Am. screw *Excelsior,* Am. screw *New Jersey,* Am. sch. *Stanley H. Minor,* Am. sch. *Celeste,* Am. sch. *City of Georgetown,* Am. sch. *F. and T. Lupton,* Am. three-mast sch. *Edwina,* Am. three-mast sch. *Anna Pendleton,* Am. three-mast sch. *Gertrude L. Trundy,* Am. three-mast sch. *Woodward Abrahams,* British three-mast sch. *Laura C.,* British half brig *Marcani,* British bark *Cedar Croft,* British barkentine *Peerless,* Swedish bark *Australia,* Am. screw steamer *J. L. Luckenbach,* Am. screw steamer *Julia Luckenbach,* Am. five-mast sch. *T. Charlton Henry,* Am. three-mast sch. *Isaac T. Campbell,* Am. bark *Penobscot,* British three-mast sch. *Lady of Avon,* Norwegian screw steamer *Banes,* American screw *San Juan,* American three-masted schooner *Madeleine,* American three-masted schooner *William H. Summer,* American seven-masted schooner *Thomas W. Lawson,* American screw *Siberia,* American screw *Finnland,* American side-wheel steamer *Uncatena,* American schooners *Fred A. Davenport* and *Star of the Sea,* American three-masted schooners *Celia F., Frank W. Benedict, Georgie L. Drake, Henrietta J. Powell, Norombegs, Joel F. Sheppard, Levi Hart,* and *Belle O'Neil;* American barkentine *Shawmut,* American barge *Charles K. Nichols,* American half brig *John McDermott,* British screw *Brunswick,* British schooner *Olympia,* British three-masted schooner *Albani,* British three-masted schooner *Hibernia,* British three-masted schooner *Margaret G.,* British topsail schooner *Gartagina* and British half brig *Aldine,* British schooner *Ada Mildred,* British three-masted schooner *Coral Leaf,* British three-masted schooner *J. L. Nelson,* British three-masted schooner *Lillian Blauvelt,* British three-masted schooner *E. Marriam,* and British three-masted schooner *Zeta.*

The Peerless Spiral Piston and Valve Rod Packing

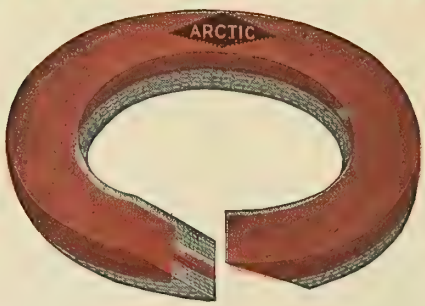
It will hold 400 lbs. of steam

Once tried always used

Will run twelve months in high speed engines

Arctic Packing

To be used exclusively for packing Ammonia Pumps



This packing is made in several hundred sizes

This packing is specially constructed for ice machine service, of layers of rubber and plies of duck which are so arranged and laid as to best resist the actions of ammonia, cold and heat.

The duck is a specially made duck, frictioned with an entirely new compound heretofore unknown to the rubber trade, and the core and back is of the celebrated Rainbow Packing compound, which is specially adapted to resist ammonia, cold and heat.

This packing is constructed on a strictly scientific basis, and the results obtained thus far have demonstrated fully its value for ammonia packing.

This packing is made in several hundred sizes. The rings may be slipped onto the rod very readily.

The usual rule is to be observed in giving measurements, the depth and width of stuffing box and size of piston rod, in order to get the size desired.

Sole Manufacturers of the

Celebrated Rainbow, Eclipse Sectional Rainbow Gasket, Hercules Combination and Honest John Packings.

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" 101, Thos. J. Hanlon, Box 765, Norfolk, Va.
" 102, Fred W. Linsemeyer, 210 Clinton St., So. Haven, Mich.
" 103, A. E. Pittman, P. O. Box 378, Newbern, N. C.

TRADE PUBLICATIONS.

"A Comprehensive Engine Test" is the title of a catalogue issued by the Buffalo Forge Company, Buffalo, N. Y. It describes the test of an engine which was made by Sydney A. Reeves, professor of steam engineering at Worcester Polytechnic Institute, Worcester, Mass. This catalogue will doubtless prove of interest as well as value to any one interested in this subject. It also shows cuts of the Buffalo horizontal compound tandem engines, as well as cuts showing the Buffalo direct-connected generating set.

Boiler Coverings for various purposes are fully discussed in a booklet issued by H. W. Johns-Manville Company, 100 William street, New York city, N. Y. Among the felts described in this booklet is fire felt, which is supplied in sheets for covering boilers, drums, heaters, and other large surfaces heated by steam, and the sheet fire felt, which, owing to its very light weight, is adapted to all conditions of heat insulation and does not sag or powder, and is especially valuable for marine and other high-pressure work.

The C. W. Hunt Company, West New Brighton, Staten Island, N. Y., is issuing a circular describing the "Stevedore" rope which it manufactures for transmission purposes and which it claims is made from specially selected fibre. A lubricant is also used with this rope which reduces the friction of the fibre and also makes it so nearly waterproof that it absorbs only a small amount of moisture when exposed to rain. The company invites correspondence from parties interested in the transmission of power.

"Acme Marine Engines and Boilers" is the title of a catalogue issued by the Rochester Machine Tool Works, Rochester, N. Y. Among the points of superiority claimed by this company are that these boilers are double-jacketed, the inner jacket of heavy sheet iron and the outer jacket of heavy planished iron, which will stand exposure to moisture. The space between the jackets is filled with asbestos board to prevent loss of heat by radiation. This catalogue also shows several types of engines and boilers made by the company.

The Binsse Machine Company, Newark, N. J., has issued a catalogue explaining the functions of horizontal boring machines. The company claims that these machines are used where precise results are demanded. The work table has three movements—one in a vertical and two in a horizontal plane. When the work has been set vertically the work table is moved crosswise and lengthwise until the horizontal setting has been found. No blocking of any kind is needed. This company will go further into details with any one interested in these machines.

"A Life Preserver" is the title of a catalogue issued by the Wisconsin Graphite Company, Pittsburg, Pa., wherein many claims are made for its graphite paint. Its adhesion to metal is so absolute that it practically becomes a part of the metal to which it is applied. It has no chemical action on the oil used beyond the preservation of its original virtue. This paint is used chiefly in structural ironwork, smokestacks, and piping, where a preservative must stand the highest and lowest temperature, and is impervious to gases, acids, etc. This catalogue, as well as any information, will be sent to any one on application.

Merriam Bros., 162 Commercial street, Boston, Mass., are mailing a catalogue devoted to yacht blocks, of which they make a specialty. The object in issuing this special catalogue is to give the reader something to show all the common kinds of blocks with the various connections that are most frequently used. They claim that in developing this block they have adapted many suggestions of designers and the new ideas were incorporated until their specialties have proven thoroughly practical. They make a specialty of designing special blocks for special purposes, which will work according to drawings when these are furnished them.

When writing to advertisers please refer to Marine Engineering.

A "Short Story of the Life of John Fitch" is the topic of the latest leaflet issued by Wyman and Gordan, Worcester, Mass. This company issues a series of sketches of prominent mechanical engineers.

The Queen City Engineering Company, Buffalo, N. Y., is mailing a catalogue descriptive of its Queen City Hydraulic Steering Engine and duplex steam pumps. This catalogue is supplemented with cuts showing the various kinds of steering gear. The catalogue is very complete, giving much space to detailed description of the subject treated.

The Buffalo Gasoline Motor Company, Buffalo, N. Y., describes its motors in a very attractive catalogue which it is now mailing. The company claims many advantages in the way of workmanship, material, etc. There is furnished with this motor a float-feed type carburettor of the most improved design, which is attached directly to the motor and contains a throttle for gaging the amount of vapor admitted to the motor cylinders. It also includes a gear pump, which is attached, taking the place of the old-style plunger pump, which insures a steady stream.

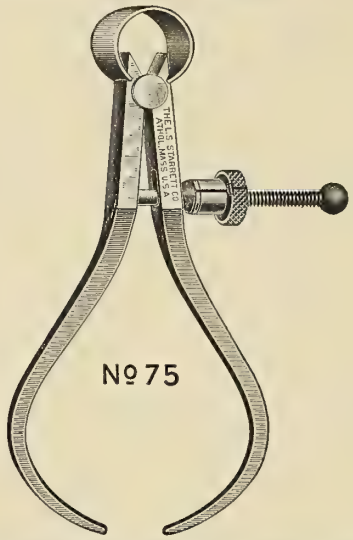
The Truscott Boat Manufacturing Company, St. Joseph, Mich., issues the most attractive and complete catalogue that has come to our notice this season. It contains many handsome pictures of launches, as well as many views of the immense factory in which they are made. Being printed in colors, the effect is excellent. This company also issues *The Launch,* a quarterly magazine containing interesting yacht stories, as well as many hints to the wise and unwise. A copy of the catalogue will be sent upon receipt of five stamps. Reeves and White, Port Richmond, Staten Island, N. Y., are general agents for this company.

"Seen from the Car," No. 31 of the "Four-Track Series," just published, is a handbook of the geology, geography, and history of the delightful region from the Palisades of the Hudson to the cataract of Niagara. It contains sixty-four pages, with numerous pictures illustrating each of the three subjects, treated in a manner that is at once attractive and instructive. It is, perhaps, the most interesting of the booklets published by the New York Central. On receipt of five cents in stamps a copy will be sent free, postpaid, to any address in America by George H. Daniels, General Passenger Agent, Grand Central Station, New York city.

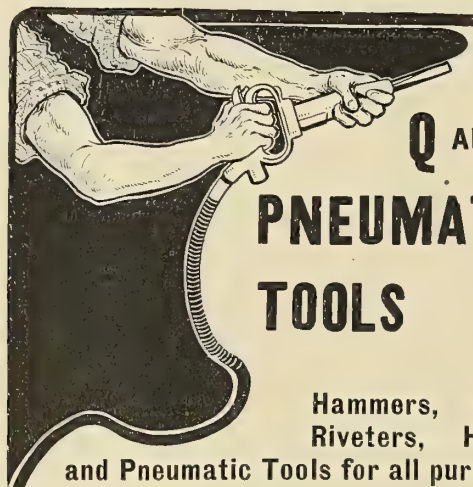
The Fuel-Oil Power Company, 60 Wall street, New York city, manufacturers of Ostergren Fuel-Oil Engines, has issued a catalogue describing this engine, which it claims is one of the lightest, simplest, and most economical in any line of industry requiring engines from 1 to 1,000 horse power. The Ostergren Fuel-Oil Engine and apparatus consists of an ordinary cylinder, piston, connecting rod, crank shaft, auxiliary air compressor, compressed-air tank, and an oil tank. This engine may be single or multiple, and the consumption of fuel is said to be very low. Permits to view the Ostergren Fuel-Oil Engine in operation may be obtained upon application to the company, which will also mail a copy of its catalogue if so requested.

THE MOST COMPLETE STOCK
BRASS and
COPPER
in Sheets, Tubes, Wire and Rod
SERVICE RIGHT, QUALITY RIGHT,
PRICES RIGHT
WATERBURY BRASS CO.
122 to 130 Centre St., New York City.
Always have our classified Stock List before you
YOURS FOR THE ASKING

As EVERY ENGINEER and EVERY MACHINIST
Uses Calipers, he should have only the best. We make them, both inside and outside, from 2½ to 24 inches. The No. 75 style is made in 5 sizes, from 2½ to 6 inches.



These Calipers are fitted with quick adjusting nuts, unless otherwise ordered.
Our Catalogue, No. 16L, of Fine Tools sent free.
The L. S. Starrett Company
ATHOL, MASS.



Q AND C
PNEUMATIC
TOOLS
Hammers, Drills, Riveters, Hoists, and Pneumatic Tools for all purposes.
SIMPLEST AND BEST
SEND FOR CATALOG
RAILWAY APPLIANCES COMPANY
Consolidated with the
Q & C COMPANY
General Offices, Old Colony Building, CHICAGO
NEW YORK OFFICE, 114 Liberty Street

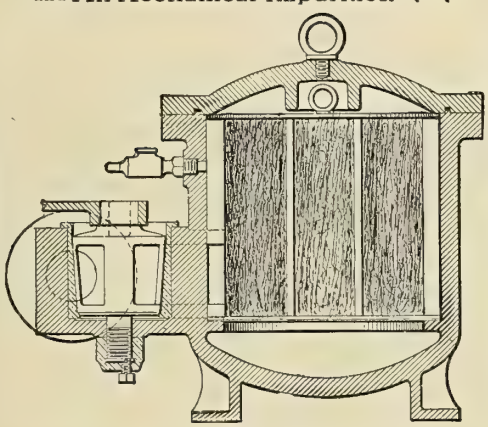
BETTER lubrication always means less friction, and consequently less wasted power and other expense. We would like to tell you about Dixon's Graphite Greases. Ask for booklet 75-i and sample.

JOSEPH DIXON CRUCIBLE COMPANY,
JERSEY CITY, N. J.

Patent **"Reflex"** FEED WATER FILTERS

Will pay for themselves in less than a year by protecting your **Boilers** from **Grease, Oil** and **All Mechanical Impurities.**

For Steamships, Yachts, Tugs, Factories



For Electric Power Plants, Hotels, Apartment Houses and Mines

Try them—If you don't like them we'll take them back and refund purchase price.

SEND FOR CATALOGUE AND PRICE LIST.

Blackburn Smith Co., 29 Broadway NEW YORK

Smalley Marine Gasoline Engines are fully described and discussed in a catalogue issued by Smalley Bros. and Company, Bay City, Mich. In this catalogue they have endeavored to come to the point as briefly as possible and at the same time give an accurate idea of their gasoline engines and accessories.

The Hall Manufacturing Company, 40 Cortlandt street, New York city, N. Y., has issued a catalogue describing its many styles of lubricating devices and giving cuts of some which should prove very interesting to those having to do with lubrication. This company also shows devices for purifying and refining all kinds of waste and refuse oil that has been used on engines, dynamos, shafting, etc.

The Columbus Steel Rolling Shutter Company, Columbus, O., is distributing a catalogue showing steel rolling doors, shutters, and partitions which prove adequate protection against fire. It requests a careful examination of its specialties, which are adapted to any building, new or old. Reasonable cost and the ease with which they are operated are a few of the recommendations in favor of their use.

Fay and Bowen, Auburn, N. Y., issue a very attractive catalogue, well-bound, and printed on heavy paper. In presenting this catalogue the aim has been to make it the most thorough and intelligent description of its marine gasoline engine. The company has endeavored to represent and explain everything fully. A leaflet is also folded with this catalogue, devoted to many flattering letters received from customers who have put the motor to the severest tests.

The Desmond Engine and Vaporizer Company, 14-16 Vesey street, New York city, N. Y., is distributing a catalogue explaining a new vaporizer which supplies the proper amount of gasoline to form an explosive mixture. It is first dashed into a spray and then is vaporized by coming in contact with the hot walls of the inlet pipe. It is claimed that this vaporizer cannot be flooded and is unaffected by the weather. It is built on a new principle, is reliable and economical.

The Maclean Hydraulic Signal Company, 2 to 4 Sherman street, Chicago, Ill., is issuing a catalogue describing hydraulic signals. This catalogue explains the hydraulic signal and tells how large amounts of capital when invested in the building of modern steamships may be jeopardized through carelessness in communication or unconscious misunderstanding of operating signals between engine room and the officers in command of the boat. This catalogue gives all particulars pertaining to this signal.

"Engineers' Chums" is the title of a catalogue issued by the Mound Tool and Scraper Company, St. Louis, Mo. This company manufactures engineers' tools. It makes many claims as to the merits and for the materials from which these specialties are made. They are carefully forged, tempered, and polished, so that they are true in shape and are most reliable for effective work. They include scraping tools, cold chisels, and packing tools. This catalogue also contains numerous letters speaking in the most complimentary way of these tools.

WATCH THIS SPACE FOR OUR NUMEROUS SPECIALTIES.

WALWORTH MFG. CO. TOOLS and SUPPLIES for STEAM WATER and GAS USERS BOSTON MASS.

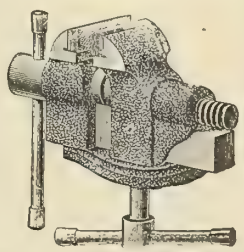
Walworth Extra Heavy Bench Pipe Vise

Is made especially for use in

MARINE REPAIR SHOPS AFLOAT AND ASHORE,

Grips pipe 1 to 6 inches inclusive, and by reason of its solid and substantial "make up," also furnishes a first-class tool for general machine work.

Will not Crush or Jam Pipe Like Ordinary Vises



JOBBERS SELL THEM—IF YOURS DON'T, WRITE.

New York, Park Row Building. **WALWORTH MFG. CO.,** Boston, 128 Federal Street.

Write for our BLUE CATALOGUE "D." showing complete line of engineers' pipe fitting tools.

The C. W. Hunt Company, West New Brighton, Staten Island, N. Y., is mailing a booklet devoted to electric hoists, which it claims have advantages in the ease with which they can be moved from one point to another and their readiness for operation. They have the further advantage that the power is only used when the hoist is in operation. These hoists do not require skilled nor a licensed engineer, and their mechanical and electrical efficiency is of a high order.

The National Meter Company, 84-86 Chambers street, New York city, issues a handsome catalogue in which it has endeavored to clearly describe the Nash Gas and Gasoline Stationary Engines. The single, double, and three-cylinder gas and gasoline engines are shown and described in detail, special attention being given to direct-connected sets for electric lighting, gas engine and triplex pump combinations for water works, and other pumping services.

"A Vest Pocket Launching Guide" published by Reeves and White, Port Richmond, Staten Island, N. Y., is the title of a little book containing much valuable information. This guide will serve as a useful receptacle for memoranda and will be prized as a souvenir of a season's boating. It also contains cuts of the Truscott launches. A copy of this guide is sent for a consideration of ten cents, and it will be a good investment for any one desiring to be thoroughly posted on yachting.

The Crest Manufacturing Company, Cambridge, Mass., is mailing a booklet describing its motors, which it claims are constructed with the utmost care and of the best material, using hardened steel crank pins, ground shafts, etc., made of special steel mixture of great strength. The cylinders and pistons are ground and afterward lapped, which thus enables them to maintain a high pressure. Full information regarding these motors will be sent to any one communicating with the company.

The Electro-Dynamic Company, Philadelphia, Pa., is distributing a very handsome catalogue bound with heavy board and printed on good paper, showing several attractive cuts, chief among which is the trial trip of the Russian cruiser *Variag*. This company builds dynamos, motors, and other electrical machinery especially adapted for marine work. It also manufactures electric steering gear, electric speed and helm indicators, junction boxes of a high grade, water-tight electrical marine construction, etc.

The Sprague Electric Company, 531 West Thirty-fourth street, New York city, N. Y., is issuing a catalogue describing the Lundell fans, which it claims is a very practical bit of mechanism which still maintains its high standing by reason of superior design and construction. Among the many superior points credited to this fan are that of their being efficient, durable, and economical in current consumption. This company is also issuing a catalogue embracing a very complete line of electric conduits and accessories.

THE NEW VAPORIZER

"The Vaporizer that Vaporizes"

AND

WILL NOT FLOOD

A New Principle. No Hot Air. Not Affected by Weather. Reliable. Extremely Economical.

Send for particulars to

The Desmond Engine & Vaporizer Co.

14 AND 16 VESEY STREET - - NEW YORK CITY

Marine Painting

is far in advance of house painting. Marine painters know that there is no white pigment except

ZINC WHITE

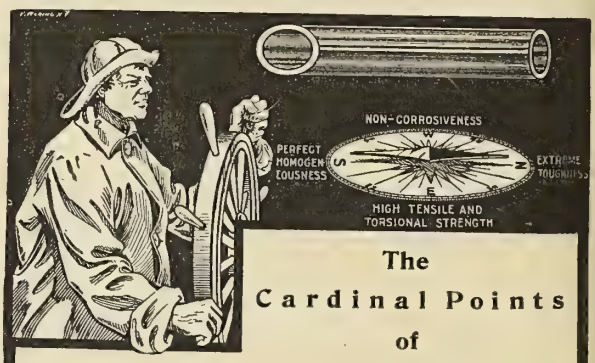
that will stand exposure under severe conditions.

FREE: Our Practical Pamphlets

"Paints in Architecture,"
"Specifications for Architecture,"
"French Government Decrees."

THE NEW JERSEY ZINC CO.

11 Broadway
New York



The Cardinal Points of

"BENEDICT-NICKEL."

NON-CORROSIVENESS
EXTREME TOUGHNESS
PERFECT HOMOGENEOUSNESS
HIGH TENSILE & TORSIONAL STRENGTH

"Benedict-Nickel" is peculiarly adapted for Condenser Tubes, and for every other purpose where highly non-corrosive tubing is required.
It positively resists Electrolysis.
"Benedict-Nickel" is an alloy of nickel and copper. It is inert, dense, tough; the tubing is spirally formed.

Send for treatise on "Electrolysis of Condenser Tubes."

BENEDICT & BURNHAM MFG. CO.
WATERBURY, CONN.
New York: 253 Broadway Boston: 172 High St.

BUFFALO ENGINES

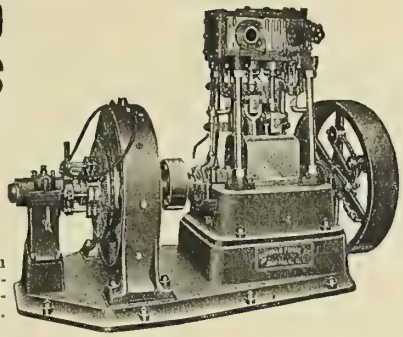
FOR

Marine Lighting Plants

Types and Sizes for All Requirements.

Write for Catalogue.

Simplicity of design with all parts readily accessible Durability of construction. Close regulation.



BUFFALO FORGE COMPANY

BUFFALO, N. Y.

OFFICES IN ALL PRINCIPAL AMERICAN CITIES

The Rhode Island Motor Company, foot of South Angel street, Providence, R. I., is mailing a leaflet describing its two-cycle gasoline engine, which it claims possesses many points of superiority, chief among which is the absence of complicated mechanism, eliminating the necessity of mechanical training in its operation. This leaflet will prove of value to any one interested in gasoline engines.

The Gasoline Motor made by S. C. Burlingame and Company, Providence, R. I., is fully described in a catalogue which it is distributing. The chief claim is that it is the smallest and lightest compared with the power developed. The shape and size of this engine make it especially adapted to auxiliary use, as, being flat in form, it occupies little space. The contact parts, being in sight, may be cleaned at any time while the engine is running. This catalogue will be sent to any one interested in this subject.

ENGINEER'S LIBRARY

FOR

UP-TO-DATE ENGINEERS

Consisting of Seven Volumes on STEAM ELECTRICAL ENGINEERING & MECHANICAL DRAWING. A Set of Practical Books for Practical Men. PRICE $12. Terms $1 Per Month.

CATALOG FREE. Sent on Request.

THEO. AUDEL & CO.
63 FIFTH AVENUE NEW YORK.

The J. L. Mott Iron Works, 84-90 Beekman street, New York city, N. Y., shows a catalogue telling something about the Mott Roman Radiators and Sun Ray Heaters. The purpose of presenting this catalogue to the trade is to place in the hands of every heating man a book that is clear, concise, and easily referred to. The pages of this catalogue contain very attractive cuts of many styles of radiators.

BUSINESS NOTES.

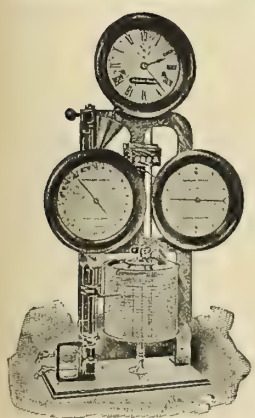
Appointed General Salesman.—Mr. Charles S. Prosser has been appointed general salesman of the Peerless Rubber Manufacturing Company, New York city, N. Y. Mr. Prosser is thoroughly qualified for such a position, having been five years in the factory and five years traveling salesman for this company.

Change of Location.—George Crouse Cook, formerly of 12-25 Whitehall street, New York city, N. Y., has taken more commodious quarters at 130 Water street. Mr. Cook has now associated with him Captain Howard Patterson, President of the New York Nautical College, in the field of general ship design, and, in addition, has organized a department for handling the most advanced yacht design and brokerage. To this new department Captain Patterson will give his special attention.

Test of Anchors.—We are informed that at a recent test of anchors made by the U. S. government, in which foreign and domestic anchors were in competition, the Baldt stockless anchor was among those tested and was endorsed for quality in many points, it proving the best stowing and strongest for practical purposes. The Baldt Anchor Company is now making at its works in Chester, Pa., for the U. S. government, sixteen anchors weighing 16,500 pounds. They have recently shipped to the Boston Navy Yard eleven anchors weighing 16,500 pounds and three weighing 13,000 pounds, making a total of over half a million pounds for thirty-six anchors. The company has recently increased its sale of anchors. Many of the new torpedo boats, as well as the torpedo-boat destroyers, are equipped with the Baldt anchor.

More Steam Turbines.—The steam-turbine equipment of the Hartford Electric Light Company, Hartford, Conn., is to be duplicated in the near future by machines manufactured by the builders of the original installation, The Westinghouse Machine Company, Pittsburg, Pa. The present engine equipment will be replaced by two 1,000 horse-power turbines, direct connected to revolving field polyphase generators. These units will operate in parallel with the 1,500-K. W. unit installed one year ago, and were chosen for the purpose of securing the utmost flexibility and economy in the operation of the plant. The turbine plant will operate with superheated steam. The original installation created much interest among engineers and power users, and it is a gratifying reflection that the first American steam turbine of large size has given such satisfaction as to warrant an extension of the equipment.

The Nicholson Perfected Ship Log.



WHITE STAR LINE. Detroit, Mich., Dec. 18, 1902.

NICHOLSON SHIP LOG CO., Cleveland, O.

Gentlemen:—As our year is just ending, have been summing up to get the worth of the different improvements we have installed in our passenger boats. The Nicholson Ship Log comes to us as one of the most important.

We have your logs in our steamers Tashmoo, Greyhound, City of Toledo, and shall, before spring, install in our new steamer Owana, another of your logs.

Although we do not use it particularly for the distance run, we do use it in regulating the speed of our vessels while approaching dangerous places or passing vessels, either in commission or at moorings. As your log works so rapidly, from the dial the Master in charge can determine in a moment just what speed he is passing the water. It is of great assistance to him and valuable to us to know that the speed is within the limits of the law. I really believe that all vessels should have one. When you are next in Detroit, drop in and we will arrange for installing a log in our steamer "Owana." Yours truly,

B. W. PARKER, General Manager.

Eastern Agents, H. E. DANTZEBECHER & CO., The Bourse, Machinery Dept., Philadelphia, Pa.
Pacific Coast Agent, W. H. PIERSON, 421 Market Street, San Francisco, Cal.

Catalogues on Application. **NICHOLSON SHIP LOG CO.,** 204 SUPERIOR STREET, CLEVELAND, O.

Change of Location.—Roger Upton, the well-known yacht specialist, finds that it will be possible for him to continue his present occupation without conflicting with the duties of secretary of the American Glue Company. He has given up his office at Salem, Mass., and gone to 419 Atlantic avenue, Boston, Mass. His intention is, to devote himself to advising yacht owners and prospective owners, and to supervision of construction and to repairing and fitting out yachts, rather than to actual brokerage.

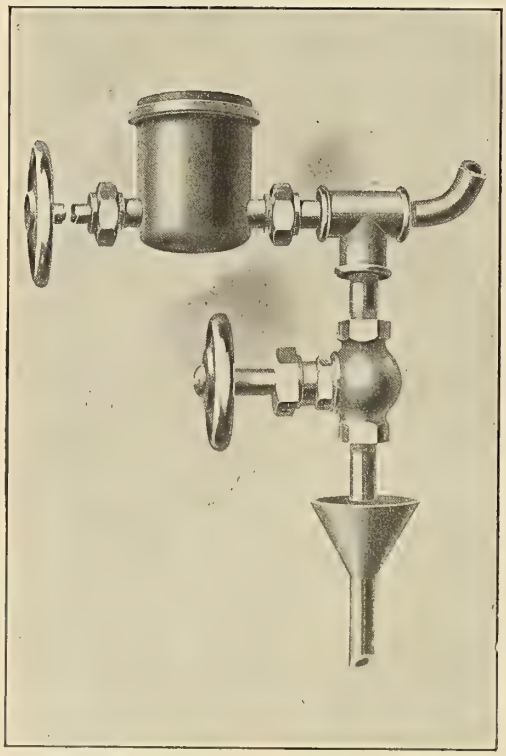
Sales of Propellers.—The popularity of the propeller wheels made by the Sheriffs Manufacturing Company, Milwaukee, Wis., is shown by the following list of sales recently reported; 5 feet 6 inches, Norfolk, Va., 12 feet Chicago, Ill., 10 feet 7 inches also to Chicago, 9 feet to New Orleans, La., 32 feet 6 inches also to New Orleans, 30 feet to Chattanooga, Tenn., 48 feet Grand Rapids, Mich., 10 feet 6 inches Manitowoc, Wis., also 16 feet 5 inches to Manitowoc, 5 feet 6 inches Loraine, Ohio, 8 feet 10 inches Luddington, Mich., 6 feet Louisville, Ky.

Screw-Propeller Computer.—The screw-propeller computer made by George R. McDermott, Professor of Naval Architecture, Cornell University, Ithaca, N. Y., is meeting with popular favor among naval architects. The computer, composed of one stationary and two movable disks, carrying suitable scales, is an instrument designed for the purpose of furnishing means whereby the dimensions and proportions of screw propellers, diameter, pitch, revolutions, slip, and efficiency, can be quickly and accurately determined.

Changes in Personnel.—The American Tool Works Company, Cincinnati, Ohio, has recently made these changes in management: Franklin Alter, president; Henry Luers, secretary and treasurer; J. B. Doan, general manager; A. E. Robinson, general superintendent. This company reports business in excellent condition and the plant is exceptionally busy in all departments. Extensive alterations and improvements are now being made at the works which will greatly increase its facilities. It has just introduced several new tools embodying the latest ideas in machine tool construction.

HERE IS A DEVICE

by which oil is inserted into the supplementary gland of metallic packing and nearly surrounds the rod between the two sets of packing rings. Thus the rod is practically traveling through a bath of oil and needs no swabbing or other outside method of lubrication. By using this device you avoid methods of lubrication which at the best are extravagant and very unsatisfactory, in that they do not accomplish the object, even though they require a great deal of attention. Our device is highly scientific and economical. Leading engine builders and engineers are introducing it very extensively.



Send for a free copy of our catalogue, which tells more about it and all about our metallic packings.

The United States Metallic Packing Co.

421 North Thirteenth Street, Philadelphia, Pa.
509 Great Northern Building, - Chicago, Ill.

MORAN BROS., Seattle

V. LÖWENER, Copenhagen, Denmark

THE

McKIM GASKET

A profitable Gasket to buy because of its great durability.

Made of rubber encased in soft rolled copper—extra annealed—so that it will accommodate itself to faced or rough joints, and withstand abnormal pressure, temperature or circulation.

Made in all sizes for manhole, handhole and pipe fittings.

Write for Prices and Catalog.

McCORD & CO.

104 Broadway, - New York
1471 Old Colony Bldg., Chicago

Appointed Auditor.—Mr. Guy W. Buxton, who has been for some time connected with the New York office of the H. W. Johns-Manville Co., has been recently appointed auditor of that company, the branches of which are located in Milwaukee, Chicago, St. Louis, Pittsburg, Cleveland, New Orleans, Philadelphia, and Boston.

Self-Lubricating Packing.—The Larkins self-lubricating packing is meeting with great favor among those using this sort of material. It is prepared with special reference to durability, adjustability, and ease of adaptation to the service required. It is composed of metals graduated in regard to hardness to withstand friction and wear without being hard enough to cut or wear the rod, and is incorporated with graphite, which serves the double purpose of furnishing constant lubrication and separating the grains of metal composing the packing, so that it can be taken up by the pressure on the glands. This packing has been used successfully on steam pressures as high as 310 pounds and water pressures as high as 1,500 pounds, and oil pumps, air compressors, ice machines, etc.

A Belt Test Free of Charge.—The offer of Gratton and Knight Mfg. Company, Worcester, Mass., to send free of charge one of its superior oak-tanned belts to any manufacturer who would like to test it, is attracting a good deal of favorable attention. The reputation of this house is a guarantee of the excellence of its belting and that it will in every respect do exactly as it agrees.

Vessels Classified.—The American Bureau of Shipping, 66 Beaver street, New York city, rates the following among other vessels recently classified by this Bureau: American screw steamer, *Henry Wilson;* American screw steamer, *M. F. Plant;* American screw steamer, *Massachusetts;* British screw steamer, *Venturep;* American three-masted schooner, *Twilight;* American three-masted schooner, *E. H. Weaver;* American three-masted schooner, *Stephen G. Loud;* American screw steamer, *Hope Sherwood;* American screw steamer, *Robert Graham Dun;* American barge, *Emily;* American barge, *Florrie;* American barge, *Gwennie.*

Water-Tube Boilers.—That the Babcock and Wilcox water-tube boiler is giving satisfaction and is looked on favorably by engineers is shown by the number of contracts for these boilers which are now being filled. In the British navy there are now under construction over 179,000 horse-power Babcock and Wilcox boilers and in the American navy there are 228,500 horse-power boilers contracted for. While shipbuilding at present is dull, except on the Great Lakes, the number of boilers being installed in the merchant vessels of this country is 26 of 18,200 horse power. Circulars regarding this boiler can be had from the Babcock and Wilcox Co., 85 Liberty street, New York.

A New Office Established.—For the greater convenience of its numerous customers and to better care for the continued increase of business in New York and vicinity, the Weston Electrical Instrument Company, Waverly Park, Newark, N. J., has opened a New York office at 74 Cortlandt street. This house will be under the management of Caxton Brown, who has a practical knowledge of the different instruments manufactured by this company and of the peculiar capacity of each. This will enable any purchaser or inquirer, when visiting or doing business in New York, who may be looking for points relative to electrical measuring instruments, to come in direct touch with a man who is qualified to give any information desired. There will be a show room in connection with the office, in which will be exhibited the different types of Weston instruments, also the individual parts which make up the instruments. The general impression has prevailed that the Weston Electrical Instrument Company makes only voltmeters and ammeters. Its factory is well equipped for the production of electrical measuring instruments of all kinds. The company is particularly fitted to turn out work of special character in which the highest excellence of mechanical and electrical work and design are the important features. The company extends a cordial invitation to all interested in the subject of electrical measurements to make use of the New York office either for the purpose of inquiry or for the prospective purchasing of instruments.

WESTON STANDARD PORTABLE DIRECT-READING

Voltmeters, Ammeters,

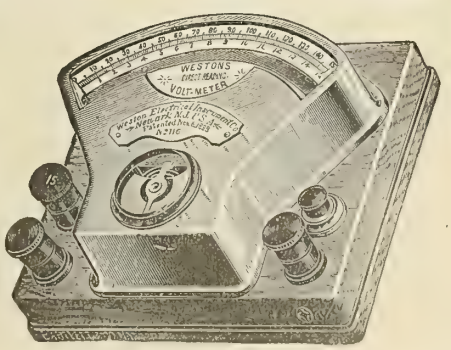
MILLIVOLTMETERS, VOLTAMMETERS, MILAMMETERS, OHMMETERS, PORTABLE GALVANOMETERS, GROUND DETECTORS, AND CIRCUIT TESTERS.

Our Portable Instruments are recognized as **the standard** the world over. Our **Voltmeters** and **Ammeters** are unsurpassed in point of extreme accuracy and lowest consumption of energy.

WESTON ELECTRICAL INSTRUMENT CO.,

New York Office, 74 Cortlandt St. Waverly Park, NEWARK, N. J., U. S. A.

BERLIN:—European Weston Electrical Instrument Co., Ritterstrasse 88.
LONDON:—Elliott Bros., Century Works, Lewisham.
PARIS, FRANCE:—E. H. Cadiot, 12 Rue St. Georges.



WESTON Standard Portable Direct Reading Voltmeter.

Pneumatic Tools.—The General Pneumatic Tool Company, recently incorporated, is a reorganization of the business of the Havana Bridge Works, Montour Falls, N. Y., which has been engaged for some years in the production and sale of pneumatic tools. The new corporation will manufacture a pneumatic riveting machine, pneumatic motor hoists, air compressors, cranes, etc. Extensive improvements in the manufacturing plant have already been made and additional buildings will be erected. Its tools have received very gratifying recognition and orders for riveting machines, pneumatic hammers, and also hoists.

Steel Castings.—The Diamond Drill Machine Company, Birdsboro, Pa., ran the initial heat of its new steel casting plant without a single hitch or blunder. Every pound of metal was poured into the castings, and every casting came out perfect. It expects to run at least one heat a day every day continuously from now on, and hereafter will be in a position to make immediate and prompt delivery of steel castings. Considering the numerous difficulties encountered in having its entire factory destroyed in June, 1902, in which it lost valuable patents, the Diamond Drill and Machine Company has cause for congratulation upon the promptness with which it was able to continue its supply of steel castings.

Water-Tube Boiler Patents.—A decree has been obtained by the Babcock and Wilcox Company, 85 Liberty street, New York, in a suit for infringement. The United States Circuit Court, in handing down its decision, favored this company and contended that the plaintiff had originated and adopted exclusively the trade name of "Babcock and Wilcox" and the initials "B. & W.", and that the trade name and initials identify exclusively the product of the method, tools, and materials employed in complainant's manufacture, and neither trade name nor initials can be lawfully used on or in relation to any products of any form whatsoever manufactured by any other person, firm, or corporation than that of the complainant.

The Ideal Pigment

TRADEMARK FEROX REGISTERED JULY 8, 1902.

The only adequate protection for Ships, Bridges, Structural Iron and Steel Work

Mohawk Paint & Chemical Co.

SOLE MANUFACTURERS OF

Patent Iron Oxide Paints

98% Pure

19 Liberty Street, New York

The only **Pure** Iron Oxide Paint.

The only Non-Crystalline Oxide of Iron

Being porous and spongy it absorbs and retains the oil and makes a permanent, durable, unchanging, protective coating for wood and metals.

It is rust-proof and not subject to chemical action.

Unequalled for submarine use.

SEND FOR DESCRIPTIVE CIRCULAR

REMINGTON

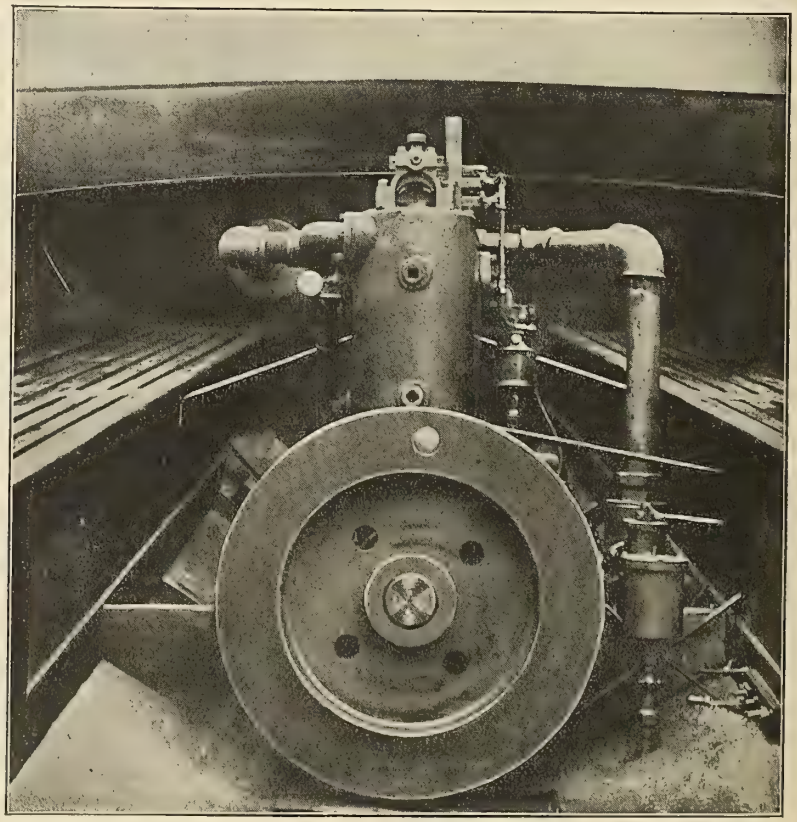
A Great Name
A Great Reputation
A Great Motor

2 Cylinder 4 Cycle Slow Speed

Write for prices now while we can fill your orders.

Remington Automobile & Motor Co.

UTICA, N. Y., U. S. A.



A Hard Patch.

Direct-Current Turbine Dynamos.—The De Laval Steam Turbine Company, 74 Cortlandt street, New York, N. Y., reports increased demand for its turbine dynamo, which combines maximum simplicity of construction and affords high thermal efficiency, while fulfilling nearly every known power requirement and meeting many conditions under which the use of another type of engine or motor is undesirable. These dynamos, as shipped from the works, are ready for immediate operation as soon as placed on a foundation and connected up to steam and exhaust lines and switchboard. All units are absolutely self-contained, are free from vibration, and occupy an exceedingly small space. The economy is claimed to be as good as the condensing engine, and the regulation is within 2 per cent. from no load to full load. There are few parts to get out of order, and no valves to set, no stuffing boxes to be attended to, no bearings to adjust. All machines are operated at the works, and purchasers are at liberty to make any test desired for themselves in the testing room before shipment, thereby removing any uncertainty as to efficiency after installation.

A Serviceable Blow-off Valve.—The Walworth Manufacturing Company, Boston, Mass., is finding a steadily-increasing demand for the Neverstick boiler blow-off valve. The inventor started with the recognized fact in view that, in order to produce a quick-opening blow-off valve for use on steam boilers, calculated to successfully sustain the severe usage to which it is subjected, a radical departure from the old line was necessary, and he designed a valve which meets the most exacting requirements and the approval of the people who are calculated to judge the merits of such devices. The plug, which is held to its seat by a hard bronze ring, or collar, screwed into the neck of the valve and locked through by means of an ingenious and simple device, will not lift from its seat sufficiently to admit grit and sediment between the plug and the seat to wear on both, as in some valves where soft, yielding packing is depended upon to hold the plug to its seat. In this valve the scale and dirt are blown through the inside of the plug to its seat, and no part of the valve exposed to currents of cutting scale is depended upon to keep the valve tight. When worn by long service, it can be readjusted and the back lash between the ring and the head of the plug taken up by screwing forward the ring to a proper bearing on the plug and again locking it, when the valve will be as good as ever.

Cabins and Staterooms

of modern vessels especially those in the passenger service should demonstrate the supreme possibilities of the wood finisher's art.

This demands a special varnish, however, as atmospheric conditions are more destructive to varnish afloat than ashore and the ordinary article is of but little use.

The varnish best adapted to withstand the deleterious influences of wind, wave and weather is

Berry Brothers' Spar Varnish.

Further particulars and a unique marine puzzle sent free for the asking. Write us.

Berry Brothers, Limited,
Varnish Manufacturers,

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Portable Electric Tools.—The Hisey portable, electrically-driven grinders and hand drills, manufactured by the Hisey-Wolf Machine Company, Cincinnati, Ohio, are meeting with universal favor, as shown by the large orders secured. The grinder is for grinding centers, cutters, reamers, dies, rolls, etc.; also for surface, parallel, and internal grinding. The hand drill is for drilling holes in metal or wood; does away with the old-style hand drill, and is driven at a much higher speed. It is under the perfect control of the operator at all times. This drill is made in three sizes, to hold drills from zero to 1-4-inch, zero to 3-8-inch, and zero to 1-2-inch; weights, 14, 16, and 24 pounds respectively.

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OF

Marine Engineering

FOR

JANUARY-DECEMBER—1902

Is now Ready for Delivery

PRICE $4.00

Marine Engineering, 309 Broadway, New York

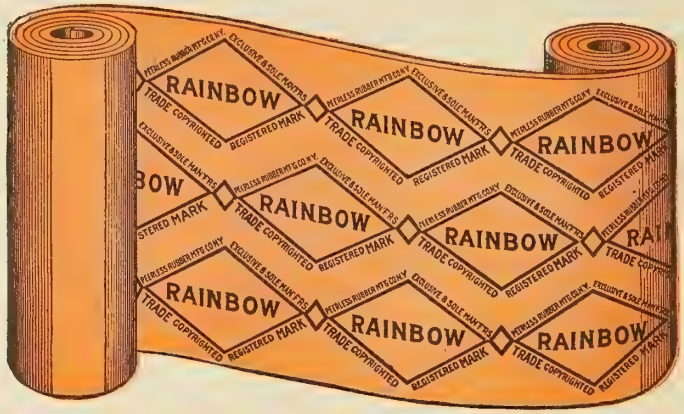
Rainbow Packing

Makes Steam, Flange and Hot Water Joints Instantly

Thousands of Imitators.

No Equal.

Will Hold Highest Pressure.



Don't have to Use Wire and Cloth to Hold

RAINBOW

Can't Blow it Out.

THE COLOR OF RAINBOW PACKING IS RED

See that the Trade Mark (three rows of diamonds in black, connected) extends throughout the entire length of each yard or roll

WILL CARRY IN STOCK

It is an undisputed fact that Rainbow Packing is the only Sheet or Flange Packing in the world that will carry in stock for months and years without hardening or cracking

The Eclipse Sectional Rainbow Gasket

3/8 in.
1/2 in.
5/8 in.
} **For Hand Holes.**

3/4 in.
7/8 in.
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} **For Extra Large Joints.**

Fac-simile of a 6-inch Section of Eclipse Gasket showing Name and Trade Mark imbedded.

The Eclipse Gasket is red in color, and composed of the celebrated Rainbow Packing Compound. It will not harden under any degree of heat, or blow out under the highest pressure, and can be taken out and repeatedly replaced. Joints can be made in from three to five minutes.

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" 102, Fred W. Linsemeyer, 210 Clinton St., So. Haven, Mich.
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TRADE PUBLICATIONS.

The Billings and Spencer Company, Hartford, Conn., has issued a booklet devoted to drop hammers, small forgings, caliper gages, surface and scratch gages, etc. Superior workmanship, as well as accuracy in the construction of these specialties, is claimed.

The Rand Drill Company, 128 Broadway, New York, N. Y., is mailing a leaflet in which it claims its Imperial pneumatic tools to be efficient, durable, economical, and adapted to all classes of work. In addition to these tools, air compressors are manufactured by the company, as well as motor hoists, rock drills, and air appliances of every description.

"How to Pack Gas Engine Cylinder Heads" is the title of a leaflet issued by H. W. Johns-Manville Company, 100 William street, New York, N. Y., giving full directions for preparing the flange, cutting, and so applying the gasket that the best surface may be obtained. The methods described in this leaflet are claimed to be most successful in avoiding difficulties and securing the best results.

Duluth Stokers are described and illustrated in a catalogue issued by the Duluth Stoker Company, Duluth, Minn. Many claims are made as to the merits and superiority of construction, which consists of an endless bolt of grate bars lying crosswise in the furnace, parallel to each other, and supported by two endless chains, one on each side of the furnace. These chains are of the ordinary type, excepting that the pitch of the links is somewhat greater than in ordinary chains.

New York Belting and Packing Company, New York, N. Y., is mailing an illustrated catalogue descriptive of interlocking rubber tiling. This catalogue shows a range of colors and the possibilities in the way of design made from this tiling. It is claimed to be noiseless, non-slipping, waterproof, and it may be laid direct upon existing floor, whether of wood or cement. This tiling is used extensively in ferryboats and other vessels; also in banking rooms, corridors of public buildings, etc. The catalogue is very handsomely published.

The Garvin Machine Company, Spring and Varick streets, New York, is mailing a catalogue which is devoted to universal milling machines. These machines have standard micrometer adjustment, adjustable feed cone bracket, ball thrust for elevating screw, arm braces, hardened and ground outboard center, etc. Table is fitted with automatic trip and reverse, has three T slots and a micrometer dial on the feed screw for rack cutting, spacing holes, etc. Simplicity and compactness have been secured by making one part perform several functions, which saves useless duplications.

The New Britain Machine Company, New Britain, Conn., is distributing a leaflet describing a self-acting vise for filing band saws. It claims that the self-adjusting spring jaws clamp the saw firmly when filing, yet yield to the movement of the saw from left to right when pushed along by the file. The company also describes in this leaflet the equal-blow setting machine. In this machine there are two hammers, pressed by the same spring, and striking equal blows at the same instant, setting two teeth at each turn of the handle. The amount of set is in view of the operator, and can be increased or diminished by turning screws which regulate the force of the blow.

Reflex feed-water filters are described in Catalogue No. 4 issued by Blackburn Smith Company, engineers and contractors, 29 Broadway, New York. This catalogue demonstrates that the best boiler can be quickly ruined by carelessness or ignorance, which is not always due to the engineer in charge, but often to the failure of the owner to employ modern precautionary methods. It is easy to prevent destructive foreign matter from entering boilers by using an effective filter either in the suction or in the discharging side of the feed pump. This will check the passage into the condensers of the oil and grease used for lubricating pistons, rods, and valve stems and of all dirt and wear from cylinders and valves.

"A Short Story of the Life of Oliver Evans" is the topic of the latest leaflet issued by Wyman and Gordon, Worcester, Mass.

The Langston Mooring Company, 309 Broadway, New York, N. Y., has issued a catalogue describing the Langston mooring device, which it claims affords absolutely secure anchorage for vessels and buoys under extreme conditions of storm, ice pressure, or other sources of violent strain.

The Niles, Bement, Pond Company, 136 to 138 Liberty street, New York, N. Y., is distributing a handsome catalogue which contains a complete line of horizontal boring, drilling, and milling machines that are adapted to every variety of service. A number of recent designs in this type of machine appear in the first section. A few illustrations are shown of machines at work on various boring and milling operations.

The Admiral Improved Stockless Anchor is described in a leaflet issued by the Admiral Anchor Company, Chester, Pa. This leaflet shows a photograph of one of the 16,800-ton anchors, two of which have been supplied for a steamship now being built by the Eastern Shipbuilding Company, New London, Conn. Among the advantages of this anchor are simplicity of construction and great strength; its ability to take hold with both flukes simultaneously, and not break the mud on going into it.

The Morse Monitor Nozzle is described in a leaflet issued by Andrew J. Morse and Son, 140 Congress street, Boston, Mass. This is a device which the manufacturers claim affords permanent fire protection. It is specially adapted for tugs, fireboats, water towers, hose wagons, etc.; also for the protection of shipyards, wharves, mills, factories, car houses, lumber yards, hotels, etc. This company also manufactures underwriters' pipe, hose couplings, hose pipes, hydrant gates, fire axes, fire pails, etc.

The Sprague Electric Company, 527 West Thirty-fourth street, New York, N. Y., is distributing Bulletin No. 102, which is devoted to direct-current generators of the split-pole type. This bulletin contains several cuts showing the various parts from which the generators are made. This company is also mailing Bulletin No. 101, describing the direct-current generators of the single-field coil type. The most notable feature of this type is the construction of the field magnet, whereby all the field pieces are magnetized by a single energizing coil.

Multiple drills are fully illustrated in a catalogue issued by the Niles, Bement, Pond Company, 136 to 138 Liberty street, New York, N. Y. A few of the recent designs are shown, and these include not only its standard heavy multiple drills, adapted to railway and general work, but also several machines of Pratt and Whitney Company's designs, especially built for the drilling of duplicate parts. The machines are of two general types—multiple drills, in which the spindles are adjustable to any position in a given line, and adjustable multi-spindle drills, in which the spindle may be mounted in a group of any shape or size within the capacity of the machine.

ONE WORD "EUREKA"

covers all that's good in PACKING. First cost low—lasts twice longer—saves one-half season's expense.

Say "EUREKA" Plainly when ordering.

ECONOMY

in Power and Fuel follows the use of

Robertson Thompson Indicator

The Price is Moderate

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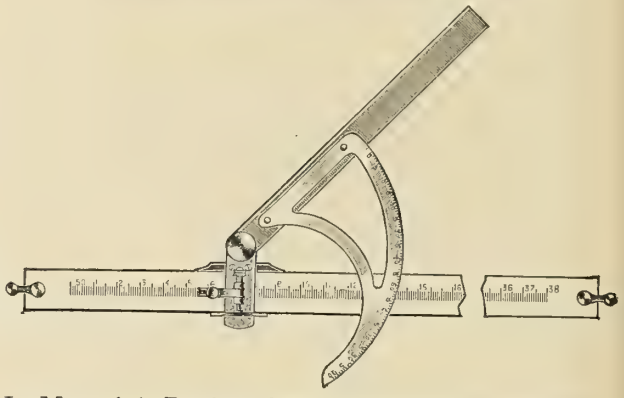
IF A

Starrett Protractor

is once used, to use any other will be like returning to a bad habit.



In Material, Design, Workmanship, and Accuracy, this instrument is not excelled. Made with bevel arm 15 to 36 inches; auxiliary blades carried in stock up to 36 inches.

Send for our *FREE CATALOGUE* No. 16 L of 112 pages with Supplement just issued, which tells of all the STARRETT TOOLS.

The L. S. STARRETT CO., ATHOL, MASS.

Q AND C PNEUMATIC TOOLS

Hammers, Drills, Riveters, Hoists, and Pneumatic Tools for all purposes.

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RAILWAY APPLIANCES COMPANY

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ALL power spent in overcoming friction is just so much taken out of your legitimate profits. Dixon's Graphite Grease is applied more easily, wastes less, and lubricates better than ordinary oils. It has numerous uses, and all of them are conclusive. Ask for booklet 75-i.

JOSEPH DIXON CRUCIBLE COMPANY,
JERSEY CITY, N. J.

Catalogues of Marine Specialties Wanted.—Allen and Ballord, naval architects and marine engineers, 104 New York Building, Seattle, Wash., ask that manufacturers of marine specialties of all kinds forward copies of their catalogues and other trade publications, for reference for filing.

The Simplex Electric Heating Company, Cambridge, Mass., is mailing a leaflet showing and describing its electric flatiron. There are many advantages claimed for this iron, which does not differ materially from ordinary flatirons, except in being always hot without coming in contact with a flame. The irons are made in a variety of sizes, and are provided with automatic switches, which shut off the current when the iron is not in use.

"Marine Motors" is the title of a catalogue published by the Mianus Motor Works, Riverside, Conn., describing a very complete line of launches in many sizes and for many purposes. Owing to a demand for a larger gasoline engine, it has been decided to add to the list of engines one of the four-cycle type, the smallest one of which will be a 12-H. P. double cylinder. The company also manufactures various kinds of hoists and other apparatus for use in connection with its engines for marine work. The hoists can be used for hauling dredges on oyster boats, pulling lobster pots or traps and fishing gear, driving pound poles, heaving anchor on schooners, etc.

The Armstrong Manufacturing Company, Bridgeport, Ohio, has issued a catalogue describing its adjustable stock and dies for machine pipe-threading and cutting-off machines, as well as a complete assortment of hinged and malleable-iron combination vises. These machines are built with great care and under able mechanical supervision. The company feels confident that any reader of this catalogue will be satisfied with the mechanical excellence and utility of these machines.

The Crocker-Wheeler Company, Ampere, N. J., is distributing Bulletin No. 34, which is devoted to electrical appliances for operating cement-making machinery. It shows motor appliances well adapted to the requirements of a great variety of industrial establishments. It is also distributing Bulletin No. 33, which describes electricity as a motive power for machine shops. One of the strong points is the increased floor capacity in a motor-driven shop. No room need be allowed for belt drives, and tools, as a result, can be brought closer together.

The Steamship Minnesota.

Among those who furnished specialties for the steamship *Minnesota* are the following:

The Lidgerwood Manufacturing Company, 96 Liberty street, New York, N. Y., furnished winches as follows: Four of 40 horse power each, with a capacity of hoisting 7,000 pounds 130 feet per minute; twenty of 40 horse power, with a hoisting capacity of 5,000 pounds at the rate of 150 feet per minute; fifty-two of 25 horse power each, with a hoisting capacity of 3,000 pounds at the rate of 170 feet per minute; all together, seventy-six winches, to be used on the *Minnesota* and her sister ship, soon to be launched. These winches were all electrically operated, having General Electric motors direct connected to them.

F. W. Bird and Sons, East Walpole, Mass., 60,000 square feet of 3-ply Neponset insulating paper, for use in the refrigerating chambers of the cold-storage plant.

The Seaboard Steel Casting Company, Chester, Pa., a number of steel castings, including spectacle frames.

Newhall Chain, Forge and Iron Company, 9 Murray street, New York, N. Y., 660 fathoms of 3 3-16-inch stud link cable chain.

The Simplex Electric Heating Company, Cambridge, Mass., electric heating and cooking apparatus, besides other electrical specialties. This company has recently furnished to the Hamburg-American, the White Star, and other lines, during the past year, electric griddles, hot-water urns, state-room food warmers, curling-iron heaters, state-room heaters, etc. We are informed that all of the upper-deck state rooms of the *Oceanic*, *Celtic*, and *Cedric* are heated exclusively by means of electric heaters furnished by this company.

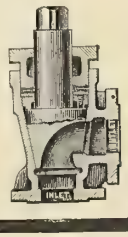
The American Steam Gage and Valve Manufacturing Company, Jamaica Plain, Boston, Mass., sixteen American-Thompson improved indicators, together with steam

WATCH THIS SPACE FOR OUR NUMEROUS SPECIALTIES.

WALWORTH MFG. CO. TOOLS and SUPPLIES for STEAM WATER and GAS USERS BOSTON MASS.

THE BOILER BLOW OFF VALVE "NEVER STICK"

Opens or closes easily under pressure.
Large ports. Discharges through plug.
Chances of plug or body being cut by scale or grit reduced to a minimum.
Made very heavy and strong.
Pronounced taper of plug provides for lasting adjustment.



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New York, Park Row Building. **WALWORTH MFG. CO.,** Boston, 128 Federal Street.
Write for our BLUE CATALOGUE "D." showing complete line of engineers' pipe fitting tools.

gages, revolution counters, indicator cocks, etc., which go through sub-contractors. This company sold direct to the shipbuilding company two 12-inch chime whistles with automatic control for signaling purposes; also two 6-inch chime whistles for regular service.

The Ashton Valve Company, 271 Franklin street, Boston, Mass., Ashton cam-lever twin marine pop safety valves; Ashton improved double-spring steam gages for the boilers, etc.

The Vanderman Plumbing and Heating Company, Willimantic, Conn., steel castings and other materials.

The Niclausse boilers were furnished by the Stirling Company, Pullman Building, Chicago, Ill.; the rivets used in their construction were supplied by the Champion Rivet Company, Cleveland, Ohio.

The Whitlock Coil Pipe Company, Hartford, Conn., the iron coil work used in connection with a refrigerating plant.

The fans and draft apparatus by the New York Blower Company, Bucyrus, Ohio.

The Adams and Westlake Company, Havemeyer Building, New York, N. Y., side lights, air ports, deck and dead lights, etc.

Williamson Bros. Company, Aramingo avenue and Cumberland street, Philadelphia, Pa., evaporators, ash-hoisting engines, steam and electric steering gear, etc.

Semi-steel castings by the Malleable Iron Fittings Company, Branford, Conn.

The Empire Laundry and Machinery Company, 178 Purchase street, Boston, Mass., laundry outfit.

The American Iron and Steel Manufacturing Company, Lebanon, Pa., galvanized deck rivets, etc.

The floor plates by the American Pressed Steel Company, Witherspoon Building, Philadelphia, Pa.

The Bridgeport Brass Company, 19 Murray street, New York, N. Y., soft sheet copper, brass and copper tubes and pipes, etc.

The Burt Manufacturing Company, Akron, Ohio, oil filters.

Chas. Cory and Son, 278 Division street, New York, N. Y., furnished the engine-room telegraph.

Duparquet, Huot and Moneuse, 45 Wooster street, New York, N. Y., galley and pantry fittings.

The General Electric Company, Schenectady, N. Y., searchlights and a large number of motors, together with electric wire, etc.

The Hyde Windlass Company, Bath, Me., windlasses, capstans, etc.

D. Kahnweiler's Sons, 437 Pearl street, New York, life preservers.

Lane and De Groot, 305 Vernon avenue, Long Island City, N. Y., life preservers, rafts, etc.

Joseph McCreery, Toledo, Ohio, heating and ventilating apparatus.

Page Bros. and Company, 347 Cambridge street, Boston, Mass., electric fixtures.

Alfred B. Sands and Son, 134 Beekman street, New York, N. Y., lavatories and other plumbing specialties.

Blackburn Smith Company, 29 Broadway, New York, N. Y., feed-water filters.

Uniform Steel Company, Rahway, N. J., steam-pipe castings.

Wheeler Condenser and Engineering Company, 120 Liberty street, New York, N. Y., condensers, heaters, etc.

Westinghouse, Church, Kerr and Company, Maritime Building, New York, N. Y., direct-connected electric sets and engines for operating blowers, etc.

Admiral Anchor Company, Chester, Pa., the patent stockless anchors.

The American Linde Refrigeration Company, 120 Liberty street, New York, N. Y., the refrigerating plant.

The Joseph Dixon Crucible Company, Jersey City, N. J., the paint with which the hull of the ship was painted.

The George F. Blake Manufacturing Company, 116 Liberty street, New York, N. Y., all of the steam pumps.

Why Argue With The Convinced?

All shipbuilders and marine painters know that

ZINC WHITE

is the only white paint available for their use.

FREE: Our Practical Pamphlets
"The Paint Question,"
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The New Jersey Zinc Co.
11 Broadway
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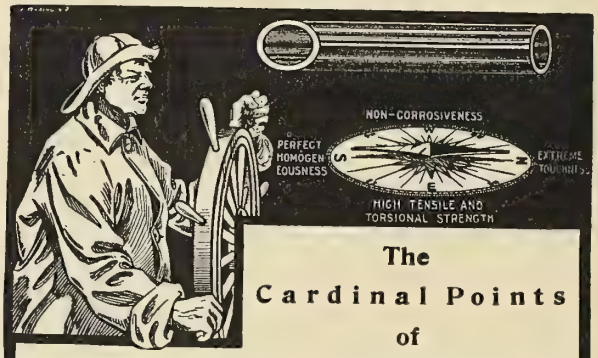

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"BENEDICT-NICKEL."

NON-CORROSIVENESS
EXTREME TOUGHNESS
PERFECT HOMOGENEOUSNESS
HIGH TENSILE & TORSIONAL STRENGTH

"Benedict-Nickel" is peculiarly adapted for Condenser Tubes, and for every other purpose where highly non-corrosive tubing is required.
It positively resists Electrolysis.
"Benedict-Nickel" is an alloy of nickel and copper. It is inert, dense, tough; the tubing is spirally formed.

Send for treatise on "Electrolysis of Condenser Tubes."

BENEDICT & BURNHAM MFG. CO.
WATERBURY, CONN.
New York: 253 Broadway Boston: 172 High St.

Buffalo Fan System

FOR

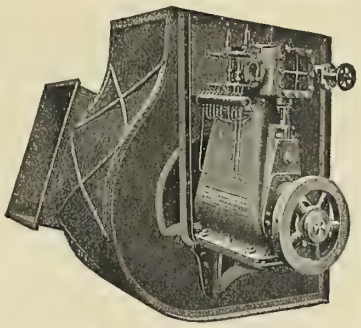
Forced Draft

and Ship Ventilation

Air Supply Positive and Uniform.

Operation is Independent of Weather Conditions.

Types to Meet All Conditions.



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BRASS and

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BUSINESS NOTES.

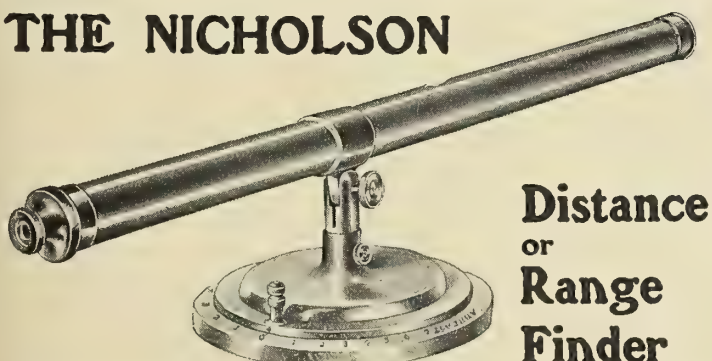
Consolidation of Two Companies.—The American Steam Gage and Valve Manufacturing Company, Boston, Mass., and the Mowry and Phillips Company have become merged under the corporate name of the American Steam Gage and Valve Manufacturing Company. The officers of the company are as follows: John McCandlish, president; N. Biggs Phillips, vice-president; R. B. Phillips, secretary; J. L. Weeks, treasurer and general manager. The other officers are the same as have been serving under the separate companies.

New Types of Pneumatic Tools.—The Helwig Manufacturing Company, St. Paul, Minn., has added to its line of reversible pneumatic motors many new types of tools to enable the company to complete orders which have recently been received. This company manufactures a full line of pneumatic staybolt clippers and a reversible pneumatic motor, which is used for drilling, tapping, reaming, etc. The last-named motor is very economical in the consumption of air, is made of few parts, and is easily examined. It drills very close to a side or corner.

Roller Bearings for All Purposes.—The Standard Roller Bearing Company, Philadelphia, Pa., has secured many large contracts for its bearings. This company furnishes roller bearings for shafting, thrust bearings for propellers, turbines, vertical shafts, etc.; also wagon, carriage, and automobile roller-bearing axles. Upon receipt of drawing showing plain bearings now being used, this company will furnish drawings showing properly-designed ball or roller journal or thrust bearings to take the place of the plain bearing. It is prepared to supply any sized bearing that may be required for any load specified.

Steel for Great Northern Ships.—We are informed that "while the officials of the Eastern Shipbuilding Company were busy in arranging the building of their shipyard at New London, the purchase of all the steel material entering into the construction of these two leviathans was placed exclusively in the hands of James G. Lindsay, of Jas. G. Lindsay and Company, Philadelphia, with the approval of Mr. Jas. J. Hill. Later on Mr. Lindsay also negotiated the contract for the building of the main engines for these ships. Mr. Lindsay has gained an enviable reputation for his knowledge of the market conditions at all times, and has succeeded in negotiating contracts for the largest tonnages of steel ever placed through one house, entering into ship construction, for use in the building of United States vessels of war, as well as ships for merchant marine, constructed by the various shipyards on the Atlantic coast. Mr. Lindsay is held in high esteem by his customers for straightforward dealings and close personal attention to, and faithful execution of, business entrusted to him. He has made a record in this respect unexcelled by any man in the same line of business."

THE NICHOLSON



Distance or Range Finder

The advantages claimed for this device are: FIRST, no mathematical calculation whatsoever required. SECOND, the distance the vessel will be out from the object observed, when abreast, is obtained some time before coming abreast. THIRD, the distance the ship will have to sail to get abreast, and the distance in a straight line to the object are instantly found. FOURTH, simplicity, durability and accuracy. It is so simple that any one not a mathematician, can readily learn to use it. There is nothing to get out of order and its accuracy is self-evident. Every ship master and pilot should have one.

CIRCULAR UPON APPLICATION.

MANUFACTURED BY

NICHOLSON SHIP LOG COMPANY

204 Superior Street, Cleveland, Ohio, U. S. A.

AGENTS

H. E. DANTEZEBECHER,
Bourse Bldg., Machinery Dept., Philadelphia, Pa.

ROBERT SNOWDON, 107 High St., Boro, London, S. E., England

W. H. PIERSON, 421 Market St., San Francisco, Cal.

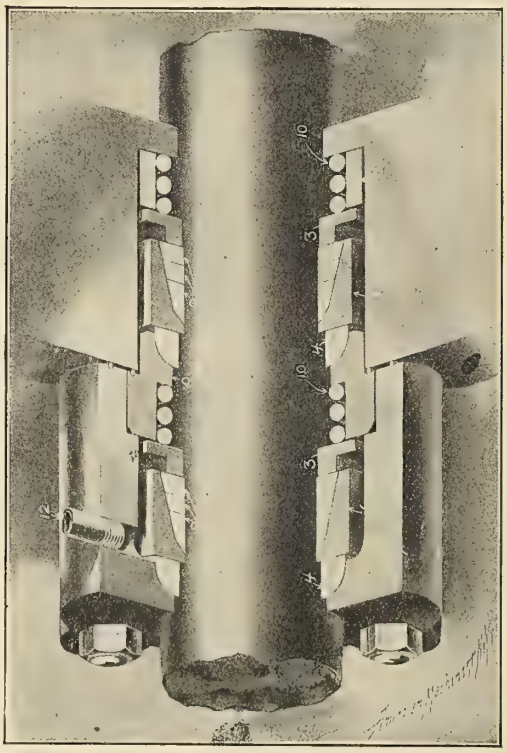
Many Orders for Sails.—Wilson and Silsby, Rowe's Wharf, Boston, Mass., have an immense amount of work on hand. Among recent orders received are the following: W. C. Rhodes, Providence, R. I., mainsail and jib; L. D. Huntington, Jr., suit of sails for 21-footer; Joseph C. Nowell, suit of sails for yacht *Nill;* Lawrence Minot, sails for yacht *Hope Leslie;* James E. Ranaley, two suits of sails for a 17-footer; W. B. Stearns, sails for 25-footer; George Lawley and Sons, complete compass outfit for two steam yachts; Tams, Lemoine and Crane, suit of sails for a 15 and 30-footer; G. R. Liljegren, Gothamburg, Sweden, 7 suits of sails; George H. Gooderham, Toronto, Canada, suit of sails for *Clorita;* B. B. Crowninshield, suit of sails for I. Bergman, St. Petersburg, Russia; J. D. Johnson, White Bear, Minn., suit of sails for 20-footer; Reginald Foster, suit of sails for 21-footer; G. L. Pirie, suit of sails for yacht *Whistle Wing;* Harry Wahl, Wyborg, Finland, suit of sails for 40-foot boat.

Bureau for Technical Men.—The Engineering Agency, 1210 Monadnock Block, Chicago, Ill., has been organized by Mr. F. A. Peckman. It is the purpose of this agency to secure competent men to supply all of the demands made upon it by companies that want high-grade help.

Nicholson Range Finder.—The Nicholson Ship Log Company, 204 Superior street, Cleveland, Ohio, manufactures a device for masters or navigators, by use of which it is claimed that any of the following results are obtained without mathematical calculations: The distance the vessel will be out from a fixed point or lighthouse, when abreast of this point, if the same course is held; also, the distance the vessel will have to travel before coming abreast. These results are instantly obtained by reading them from the chart some time before coming abreast of the object observed. The apparatus consists of a telescope rotatable on a base and a chart. The base of the telescope is drilled for eight sights, each sight zero point. These eight sights correspond with eight radial lines on the chart.

METALLIC PACKING

Metallic packing designed for one engine may not be suitable for another engine, therefore we design our packing to suit the special condition of the service required. Thus, packing which we apply to a high-pressure rod is generally different from that for the intermediate or low pressure rod.



Our great success is due in large measure to the fact that we consider each case separately, and will give a man exactly what is best suited for his engine.

While we are constantly improving our packing, we at present consider Class One packing, shown in the accompanying cut, to be the best on the market for marine and stationary work. It will be seen that this is a double packing, each set being complete in itself. The upper set of babbitt metal rings, does most of the work, while the second set is in reserve in case any water or steam happens to leak through the first set, or, should the first set fail under heavy service, the second is already on the rod to take up the work of the first set.

The United States Metallic Packing Co.

421 North Thirteenth St., Philadelphia, Pa. 509 Great Northern Building, Chicago, Ill.

MORAN BROS., Seattle **V. LÖWENER, Copenhagen, Denmark**

THE

McKIM GASKET

A profitable Gasket to buy because of its great durability.

Made of rubber encased in soft rolled copper—extra annealed—so that it will accommodate itself to faced or rough joints, and withstand abnormal pressure, temperature or circulation.

Made in all sizes for manhole, handhole and pipe fittings.

Write for Prices and Catalog.

McCORD & CO.

104 Broadway, - New York
1471 Old Colony Bldg., Chicago

VACATION STORIES.

If you are planning a trip to the country this summer be sure to send for "Mountain and Lake Resorts," a little book just issued by the Passenger Department of the Lackawanna Railroad. It will tell you about some of the most delightful summer resorts in the East, the rates of fare, price of board, and other interesting information. The book is profusely illustrated by more than 175 pictures and contains a delightful love story entitled "For Reasons of State." It will be sent free to anyone by addressing T. W. Lee, General Passenger Agent, Lackawanna Railroad, New York City, and enclosing 5 cents in stamps to cover postage.

Babcock and Wilcox Boilers.—The armored cruiser *West Virginia,* which was launched at the works of the Newport News Shipbuilding and Dry-Dock Company last month, will be equipped with 16 Babcock and Wilcox water-tube marine boilers, as will also the armored cruiser *Maryland,* also building at Newport News, and the *California* and *South Dakota,* building at the Union Iron Works.

Another Legal Victory.—The Philadelphia Pneumatic Tool Company, Philadelphia, Pa., announces another legal victory. The United States Court of Appeals has reversed the lower court in its decision on three or four claims of the Moffet drill pattern. The affirmation of the decree is on the single remaining claim—a narrow one, since it is made for a combination of all the elements expressed in this claim, including the feed screw and the specific differential gearing.

Good Record for Packing.—In 1896 the H. W. Johns-Manville Company, 100 William street, New York, N. Y., packed an asbestos high-pressure packing ring with seven others in the stuffing box at the steam end of a Worthington duplex compound steam pump, used in the elevator service in the Woodbridge Building, New York. N. Y. It worked continuously under 125 pounds pressure, and with a pumping capacity of 3,000,000 gallons every twenty-four hours. This packing has been in constant use for six years without causing the engineer the slightest trouble, and is in such excellent condition as to permit of further efficient service.

Ship Heating and Ventilating.—James McCreery, Toledo, Ohio, writes to us that he has the contract and will ventilate with his entire system the *City of South Haven,* including his air-cooling, cleansing, and humidity-regulating device. This steamer is being built by the Craig Shipbuilding Company, Toledo, Ohio, for the Dunkley-Williams Company, and is to run between Chicago and South Haven, Michigan, and is intended to be the fastest and most complete passenger steamer of its size on the Lakes. The McCreery combined coolers and heaters, 18 in number, will be used in the Great Northern ships, also his articulated sectional elbows for terminals for air discharges. These adjustable elbows are specified for use in all vessels of the navy and are fast being adopted in first-class vessels for ventilating purposes. The McCreery air-cooling, cleansing, and humidity-regulating device for use on ships in connection with his ventilating system, will be better appreciated when it is understood, and vouched for by the War Department, that the transports fitted out with this system are stated to have been the best ventilated of any in the service. The Detroit and Cleveland Navigation Company has used this ventilating system for years with such satisfactory results that a system complete has been installed, including air coolers and cleansers, in the two new large steamers, the *Eastern States* and *Western States.* After the most severe tests as to its utility and practicability of the McCreery system by the Bureau of Construction and Repair, Washington, D. C., we are informed that it has been recommended for trial on battleships.

WESTON STANDARD PORTABLE DIRECT-READING

Voltmeters, Ammeters,

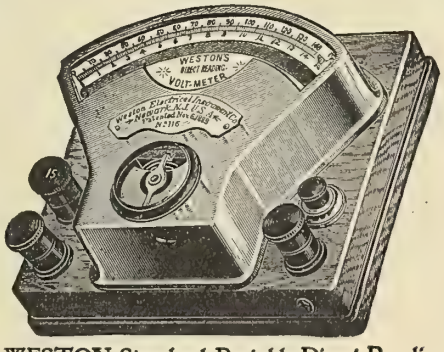
MILLIVOLTMETERS, VOLTAMMETERS, MILAMMETERS, OHMMETERS, PORTABLE GALVANOMETERS, GROUND DETECTORS, AND CIRCUIT TESTERS.

Our Portable Instruments are recognized as **the standard** the world over. Our **Voltmeters** and **Ammeters** are unsurpassed in point of extreme accuracy and lowest consumption of energy.

WESTON ELECTRICAL INSTRUMENT CO.,

New York Office, 74 Cortlandt St. Waverly Park, NEWARK, N. J., U. S. A.

BERLIN:—European Weston Electrical Instrument Co., Ritterstrasse 88.
LONDON:—Elliott Bros., Century Works, Lewisham.
PARIS, FRANCE:—E. H. Cadiot, 12 Rue St. Georges.



WESTON Standard Portable Direct Reading Voltmeter.

Disposes of Interest.—Mr. W. S. Rogers has sold his interest in the Ball Bearing Company of Maine to the Standard Roller Bearing Company of Philadelphia, Pa., severing his connection entirely with the company. He still remains general manager of the Bantam Manufacturing Company, Bantam, Conn., which will continue to manufacture a full line of ball and roller bearings.

To Enlarge Its Quarters.—On account of its constantly increasing business, the Crandall Packing Company, Palmyra, N. Y., has found it necessary to have larger quarters in which to conduct the volume of trade emanating from its New York office. It has leased commodious quarters at 123 Liberty street, New York city, where the offices and salesrooms will be located. Mr. C. M. Hildreth continues as local manager.

Contract for Pneumatic Tools.—The Philadelphia Pneumatic Tool Company, Philadelphia, Pa., has secured a contract from the Lake Shore and Michigan Southern Railway Company to supply it with all the pneumatic hammers which it will use in the new Collinwood shops and in the entire system for the period of one year. This contract was awarded after a competitive test of many different makes of pneumatic tools. The company has also received from the Wabash, the Delaware and Hudson, and the Central of New Jersey railroads large orders for its chipping and riveting hammers and drills.

Popularity of the Lozier Motor.—The Lozier Motor Company, Plattsburg, N. Y., has decided that, on account of its large and growing business in the metropolitan district, it is necessary to establish local headquarters in New York city, and, in addition, a branch office at 1 Broadway. The company has established shops at Castle Hill Point, Westchester Creek. As the principal factories and machine shops of the company are situated in Plattsburg, N. Y., the work of the New York city plant will be largely confined to the building of large yachts and the installation of Lozier engines. While no engines are manufactured at this new plant, it is the intention of the company to carry a large stock of motors on hand for immediate delivery.

The Ideal Pigment

TRADEMARK FEROX REGISTERED JULY 8, 1902.

The only adequate protection for Ships, Bridges, Structural Iron and Steel Work

Mohawk Paint & Chemical Co.

SOLE MANUFACTURERS OF

Patent Iron Oxide Paints

98% Pure

19 Liberty Street, New York

The only **Pure** Iron Oxide Paint.
The only Non-Crystalline Oxide of Iron

Being porous and spongy it absorbs and retains the oil and makes a permanent, durable, unchanging, protective coating for wood and metals.

It is rust-proof and not subject to chemical action.
Unequalled for submarine use.

SEND FOR DESCRIPTIVE CIRCULAR

REMINGTON

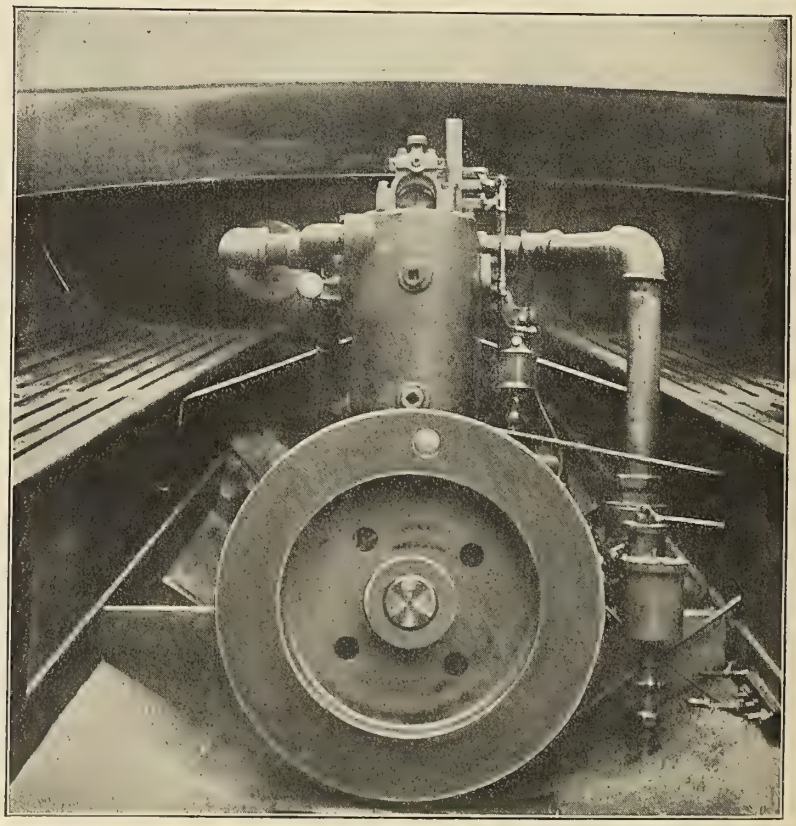
A Great Name
A Great Reputation
A Great Motor

2 Cylinder 4 Cycle Slow Speed

Write for prices now while we can fill your orders.

Remington Automobile & Motor Co.

UTICA, N. Y., U. S. A.



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" 46, D. W. Farrell, Clayton, N. Y.
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" 92, H. E. McArthur, 16 Abstract Bldg., Saginaw, W. S., Mich.
" 93, M. E. Davis, M. T. & S. Co., 929 D St., N. W., Washington, D. C.
" 94, George R. Jones, Box 222, Washington, N. C.
" 95, P. J. McMahon, P. O. Box 199, Key West, Fla.
" 100, Thos. F. Sullivan, Honolulu, H. I.
" 101, Thos. J. Hanlon, Box 765, Norfolk, Va.
" 102, Fred W. Linsemeyer, 210 Clinton St., So. Haven, Mich.
" 103, A. E. Pittman, P. O. Box 378, Newbern, N. C.

TRADE PUBLICATIONS.

Roberts Steam Piston Packing Company, Philadelphia, Pa., is mailing a booklet describing the operation of its packing, as well as showing many of its good features.

Buffalo Forge Company, Buffalo, N. Y., is sending out a mailing card that shows cuts of the Buffalo disk wheels which will ventilate hot offices, engine and boiler rooms, restaurants, workshops, and various overheated apartments, as well as remove foul odors, fumes, dust, steam, and smoke, and secure efficient ventilating, cooling, and drying.

Fort Wayne Electric Works, Fort Wayne, Ind., is mailing a catalogue discussing the direct-current generation with a view to making clear the theory of the Wood Arc Lighting Generator. This machine is a direct-current bipolar generator designed to deliver a constant current of a predetermined value at any voltage within its working range, which is from 0 to its maximum full-load voltage.

Chief draftsmen and others who have to do with drafting-room furniture will find much information in a catalogue being distributed by the F. W. Emerson Manufacturing Company, Rochester, N. Y. This catalogue is devoted to the complete description of drafting-room furniture, which includes drafting tables, blue-print frames, filing cabinets, and other appliances for simplifying the work of those persons the practice of whose profession requires articles of this kind.

"Natural Woods and How to Finish Them" is the title of a handsomely-bound book published by Berry Brothers, Detroit, Mich. It is claimed there is nothing experimental in the method given for the various styles of wood finishing. The value of the hints in this book is in no way lessened because it suggests the use of Berry Brothers' finishes, for shellac, filling, etc., are the necessary preludes to a successful finish of any make. This book will serve as a useful reference for architects, decorators, and wood finishers.

"Are all engines alike to you?" is the question asked in a very handsome catalogue issued by the Reeves Engine Company, Trenton, N. J. This company builds the Reeves compound engine, the Reeves compound marine engines, and the Reeves automatic single-cylinder engines. This catalogue refers particularly to the Reeves compound engines, with some information concerning the Reeves automatic single-cylinder engines, and contains much interesting matter, especially a description of the valve mechanism, steam distribution, and adjustable piston valve.

"Filing Devices" is the title of a catalogue issued by the Wage-Maker Furniture Company, Grand Rapids, Mich., which describes a full line of vertical letter files and filing systems, card index system, pigeonhole, catalogue, railroad correspondence, and legal-blank files, storage drawers, sectional bookcases, covered cases, bookkeepers' desks, and accountants' desks. This system of filing correspondence is the most modern means of properly caring for voluminous matter which is constantly increasing in quantity in any progressive business. This catalogue shows that the system comprises several excellent features.

Everything in the Lens.—The Gundlach-Manhattan Optical Company, Rochester, N. Y., is mailing a leaflet showing the construction of the Turner-Reich binocular field glass, which is carried out with the greatest accuracy. All the wearing parts are so constructed that they will stand long and continued use. The adjustment pupillary distance has a range of 50 to 70 millimeters, which provides accommodation for any difference in eyes. It is quite common to find a difference between the right and left eyes, and to obviate this one eyepiece is made to focus independently of the other. This focus, once obtained, need not be changed, as the general focus is regulated by a milled screw, and is easily operated by one hand, which moves both eyepieces simultaneously.

Crank forgings are thoroughly discussed in a booklet issued by Wyman and Gordon, Worcester, Mass. This booklet will doubtless be of interest to builders of gas engines in which forgings are used. These forgings are put through a process of treatment by heating which increases the tensile strength of steel.

Engine and boiler supplies are described in a very complete catalogue distributed by the Sherwood Manufacturing Company, Buffalo, N. Y. This catalogue is devoted to articles manufactured for engines and boilers, though this company also makes a specialty of brass work for engine rooms, railings, and bronze castings.

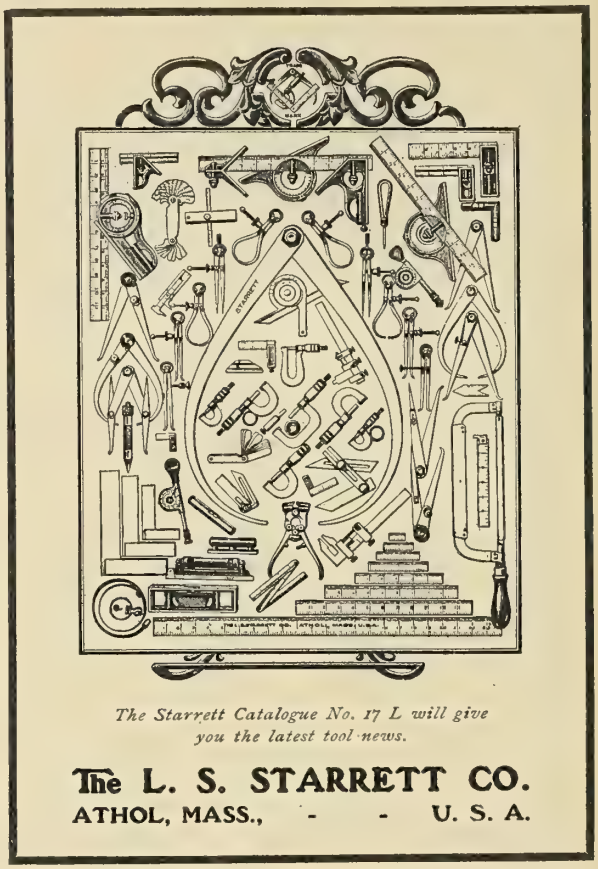
The launches manufactured by the Lozier Motor Company, Plattsburg, N. Y., are fully described in a catalogue recently issued by this company, wherein many pictures are shown giving an excellent idea of the type of boats constructed. The demand for launches from these models has so increased that it has been found necessary to enlarge the plant to double its last year's capacity.

A Handsome Calendar.—Pratt-Whitney Company, 136-138 Liberty street, New York, N. Y., is mailing an extremely handsome desk calendar printed on heavy paper. There is a sheet for each day. At the top is an extract reprinted from "The Letters of a Self-Made Merchant to his Son." At the bottom is a brief reference to the specialties manufactured by it. The calendar is the handsomest one that has come to our notice.

Sarvent Marine Gasoline Engines, manufactured by the Sarvent Marine Engine Works, 18-30 West Randolph street, Chicago, Ill., are beautifully illustrated and described in a catalogue issued by this company; the book comprises thirty pages and is an exceptionally fine specimen of printing, while the engraved illustrations of the various parts of the engine make it altogether one of the most complete catalogues of its kind that have come to our notice.

The Great Lakes Engineering Works, Detroit, Mich., builders of steel ships, marine and stationary engines, vertical, high-duty air compressors, hydraulic dredging machinery, centrifugal pumps, and marine work of all kinds, has issued a handsome catalogue of 40 pages, which is bound in heavy paper and printed in green and gold. The illustrations are large and exceptionally well printed, showing the Great Lakes Engineering Works, steel floating dry-docks, steam engines, propeller wheels, and forgings.

Garden City Fan Company, Chicago, Ill., is distributing a catalogue, Number 23, devoted to exhausters, pressure blowers, ventilating fans, positive blowers, hot-blast apparatus, multiple boring machines, centrifugal mills, and iron founders. This company has endeavored to give an accurate description of its specialties, and, with this end in view, has fully illustrated the catalogue. Prominent among the pictures are those of the Chicago Colosseum and the Kansas City Convention Hall, both of which are heated and ventilated by the Garden City hot-blast apparatus.



The Starrett Catalogue No. 17 L will give you the latest tool news.

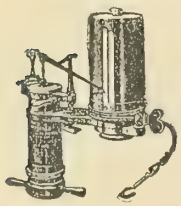
The L. S. STARRETT CO.
ATHOL, MASS., - - U. S. A.

Dixon's Lumber Pencils are manufactured in black and colors by the Joseph Dixon Crucible Company, Jersey City, N. J. They are claimed to be first-class as to quality of material and are standard in every way.

ONE WORD "EUREKA"

covers all that's good in PACKING. First cost low—lasts twice longer—saves one-half season's expense.

Say "EUREKA" Plainly when ordering.



ECONOMY

in Power and Fuel follows the use of

Robertson Thompson Indicator

The Price is Moderate

JAS. L. ROBERTSON & SONS
204 FULTON STREET, NEW YORK

Bound volumes of Marine Engineering

are for sale as follows:

Vols. III and IV,	1899, . .	$4.00
Vol. V, . .	1900, . .	4.00
Vol. VI, . .	1901, . .	4.00
Vol. VII, . .	1902, . .	4.00
	Total,	$16.00

Substantially bound in black cloth with leather corners and backs.

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will also be out of print shortly. As long as any remain in stock

$12.00

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ALL power spent in overcoming friction is just so much taken out of your legitimate profits. Dixon's Graphite Grease is applied more easily, wastes less, and lubricates better than ordinary oils. It has numerous uses, and all of them are conclusive. Ask for booklet 75-i.

JOSEPH DIXON CRUCIBLE COMPANY,
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Patent "Reflex" FEED WATER FILTERS

Will pay for themselves in less than a year by protecting your **Boilers** from **Grease, Oil** and **All Mechanical Impurities.**

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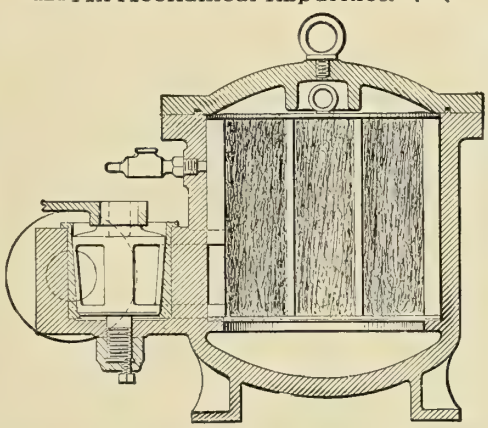

For Electric Power Plants, Hotels, Apartment Houses and Mines

Try them—If you don't like them we'll take them back and refund purchase price.

SEND FOR CATALOGUE AND PRICE LIST.

Blackburn Smith Co., 29 Broadway NEW YORK

Barbour Bros., Syracuse, N. Y., are issuing a catalogue which sets forth briefly and clearly by words and illustrations the many superior points of crafts manufactured by them.

The Garlock Packing Company, Palmyra, N. Y., has just published a new and enlarged illustrated catalogue of its high-grade, standard packing, gaskets, etc., a copy of which will be mailed to any of our readers on application.

The "Iowa" Boiler, made by the Iowa Iron Works Company, Dubuque, Iowa, is fully described in the catalogue which has just been issued. This catalogue is well written and gives some valuable information regarding various types of boilers made by this company.

Exhaust fans are fully illustrated and described in Catalogue Number 149 issued by the American Blower Company, Detroit, Mich. These fans are for the removal of shavings and dust, the lifting and distributing of cotton and wool, and the removal of smoke and fumes, and for use in connection with heating and drying plants.

Knox Gasoline Engine, made by the Camden Anchor-Rockland Machine Company, Rockland, Me., issues a very attractive catalogue printed on heavy paper. In presenting this catalogue the aim of the company has been to give a most thorough description of its marine gasoline engine. A part of this book also describes anchors which this company makes.

The Norwalk Brass Company, Norwalk, Conn., is mailing a catalogue describing the Norwalk reversing gear, which is claimed to be the invention of practical men who are thoroughly familiar with the different powers now in use. The gear has been so constructed that it will fit most any boat, and once placed give perfect management of both movements of the propeller. On the forward motion, the mechanism is such that a solid connection between engine and propeller is formed and the machine so locked that there is no action of the gears and consequently no loss of power.

BUSINESS NOTES.

LARGE ORDERS FOR SAILS.—Wilson and Silsby, Rowe's Wharf, Boston, Mass., the well-known sailmakers, have received the following orders for sails: R. L. Muspratt Williams, Halifax, N. S., mainsail and jib; J. O. Honson, White Bear Lake, Minn., set of sails for a 20-footer; C. H. W. Foster, set of sails for the yacht *Puritan;* Small Brothers, set of sails for *Little Shamrock;* Gordon Adams, set of sails for yacht *Gloriana;* Gus Amundson, White Bear Lake, Minn., three sets of sails for 17-footers; Tams, Lemoine and Crane, set of sails for a raceabout; E. B. Leary, Rochester, N. Y., two mainsails for a small boat; Edw. H. Williams, Jr., set of sails for *Hermitage;* I. Bergmann, St. Petersburg, Russia, set of sails for a racer.

WATCH THIS SPACE FOR OUR NUMEROUS SPECIALTIES.

WALWORTH MFG. CO. TOOLS and SUPPLIES for STEAM WATER and GAS USERS BOSTON MASS.

COMPARE WALWORTH WEIGHTS With the Weights of Valves You Have Been Using.

ONE INCH BRASS VALVE WEIGHTS

Globe, Jenkins Disc	58 onz.
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Gate, Standard	55 onz.
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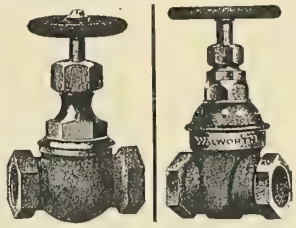
THE B ST IS CHEAPEST IN THE END. USE WALWORTH.



JOBBERS SELL THEM—IF YOURS DON'T, WRITE.

New York, Park Row Building. **WALWORTH MFC. CO.,** Boston, 128 Federal Street.

Write for our BLUE CATALOGUE "D." showing complete line of engineers' pipe fitting tools.

Change of Location.—The American Metallic Packing Company has moved its offices from the Williamson Building, Cleveland, Ohio, to its factory, 46 South Water street, a change which will prove most advantageous to the company.

Thermometers for Mechanical Use, manufactured in great variety by the Helios-Upton Company, Peabody, Mass., will be found illustrated and described in a twelve-page folder which this company is distributing. Thermometers are extensively used on board ship and in land plants for taking the temperatures of water and steam and for use in connection with refrigerating machines and for many other purposes that this folder tells of with much interest.

Correspondence Solicited.—Charles T. Porter, Montclair, N. J., is anxious to communicate with marine and stationary engine builders, with a view to forming a company to grant licenses for the use of an engine which he has recently perfected, as well as a boiler with its accessories—furnace, feed-water heater, steam superheater, etc.—adapted to high pressure and high rate of evaporation. Mr. Porter will arrange to meet persons proposing to unite in this enterprise and lay the details before them.

Vessels Classified.—The American Bureau of Shipping, 66 Beaver street, New York city, N. Y., rates the following among other vessels recently classified by this bureau: American screw *Mississippi,* owned by the Atlantic Transport Company; Am. screw *Monroe,* owned by the Old Dominion Steamship Company; Am. schooner *Florence H. Penley,* Am. schooner *Gordiner G. Deering,* Am. barkentine *John Swan,* Am. three-masted schooner *Edw. R. Baird,* British schooner *Howard,* Am. screw *New York,* Am. schooner *Washington B. Thomas,* Am. barkentine *Westfield,* Am. tern *Josephine Ellicott,* Am. tern *Gertrude A. Bartlett,* Am. tern *Doris,* Am. tern *Alice McDonald,* Am. schooner *Frederic A. Dugan,* Am. tern *Hattie Dunn,* British tern *Wandrian,* Swedish schooner *Pramat,* Swedish barkentine *August,* and Swedish galliet *Georg.*

M. E. B. A. Local Secretaries.—Following is interesting information showing the connections of the secretaries of the local associations of the M. E. B. A.: No. 1, paid business manager; No. 2, chief engineer of a steamer; No. 3, engineer of electric-light plant; No. 4, engineer of grain elevator; No. 5, chief engineer Baltimore Water Works; No. 6, chief of harbor boat *Mark Twain;* No. 7, chief engineer Fire Department; No. 9 chief steamer *E. M. Peck,* a Lake freighter; No. 15, railway; No. 18, on river steamer; No. 20, engineer printing company; No. 23, chief steamer *Transfer;* No. 24, on ferry steamer; No. 26, on river steamer; No. 27, on Lake steamer; No. 30, chief of a sand-pumping concern; No. 33, paid business manager; No. 36, on a tug; No. 37, on tug *Perry;* No. 38, paid business manager; No. 39, on a steamer; No. 40, on government vessel; No. 41, paid business manager; No. 42, owns a supply store; No. 43, on lake steamer; No. 44, on a lake steamer; No. 45, on ship as assistant engineer; No. 46, on St. Lawrence river steamer; No. 47, on tug; No. 51, on lumber barge (part owner); No. 53, chief steamer *Yale;* No. 55, chief lake steamer; No. 57, agent Standard Oil Company; No. 58, on a boat; No. 62, United States Navy Yard at New London; No. 65, on a boat; No. 67, lumber barge and fruit steamer; No. 70, owner and engineer of tug; No. 72, owner of tug; No. 73, on tugs and lumber barges; No. 75, St. Lawrence river steamer; No. 76, shore job; No. 78, tug; No. 80, Hudson river steamer; No. 80, shore job; No. 83, tug; No. 84, tug; No. 85, lake steamer; No. 86, tug; No. 87, chief *George Grammer;* No. 88, U. S. lighthouse; No. 89, Rutland Line, chief engineer; No. 91, chief P. S. S. Co.; No. 92, shore job; No. 93, engineer M. S. and T. Company Building; No. 100, tug; No. 101, paid business manager; No. 102, engineer passenger and fruit steamer; No. 103, with a manufacturing company.

"MARINE WHITE"
"MARINE TINTS"

Mean simply

ZINC WHITE

pure and tinted. Why urge an argument already closed? There is no marine white but ZINC WHITE.

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last longest if made of

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ELECTROLYSIS is positively resisted because "Benedict-Nickel" is an alloy of nickel and copper.

CORROSION is impossible, as the tubing is so perfectly homogeneous.

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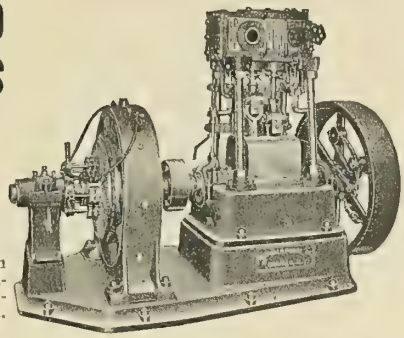
Types and Sizes for All Requirements.

Write for Catalogue.

Simplicity of design with all parts readily accessible. Durability of construction. Close regulation.



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BUFFALO, N. Y.

OFFICES IN ALL PRINCIPAL AMERICAN CITIES

ARC CIRCUIT CUT-OUTS.—The Fort Wayne Electric Works, Fort Wayne, Ind., has been making arc-lighting apparatus for many years, and in that time has developed accessories for almost every purpose. Among these are cut-outs of various types designed for service under different conditions of operation. For installing of arc lamps, either indoors or outdoors, on high potential series circuit, it is essential that some form of cut-out be used which will insure the safety of the trimmer while adjusting the lamp while others on the same circuit are burning. On circuits of lower potential it is convenient also to have some easy means of turning on or off a lamp beyond one's reach. Another valuable adjunct of the series of arc lighting circuits is a device that will cut out a group of lamps or a section of the circuit without interfering with any other part of the circuit.

FREE BOOKLET

Containing 32 pages, giving sample questions for marine engineers and firemen, taken from ***"LUCAS' QUESTIONS AND ANSWERS FOR MARINE ENGINEERS,"*** *relating to the theory practical operation and care and management of marine engines, boilers, and auxiliary machinery. Write to-day for this valuable booklet, also complete catalog of the* ***"Marine Engineer's Library,"*** *consisting of 7 volumes, price $12. Supplied on one dollar monthly payments. Address*

THEO. AUDEL & CO., PUBLISHERS

63 FIFTH AVENUE, - - NEW YORK CITY

DEPARTMENT FOR SECOND-HAND TOOLS.—The Garvin Machine Company, Spring and Varick streets, New York city, N. Y., has established what may be an important department in the company's business, to wit, the handling of second-hand machinery. The machines thus acquired are secured by purchasing a plant outright or by exchange or consignment.

LIVE TOOLS FOR LIVE PEOPLE.—The Hisey-Wolf Machine Company, Cincinnati, Ohio, is receiving numerous orders for its electric-driven tools. This company manufactures the electric-driven grinder and the electric-driven hand drill. The former is for grinding centers, cutters, reamers, dies, rolls, etc.; also for surface, parallel, and internal grinding. The latter is for drilling holes in metal or wood, and, in doing away with the old style of hand drill, works at a much higher rate of speed, saves time and strength, and is under perfect control of the operator at all times. It can be carried anywhere and is of three sizes: 0 to 1-4 inch, 0 to 3-8 inch, 0 to 1-2 inch. The weights are 14, 16, and 24 pounds, respectively.

MECHANICS' POCKET MEMORANDA.—The International Correspondence School, Scranton, Pa., has completed the sixth edition of this book. The publishers present to the engineering public this new edition, in which a number of notable changes have been made. The matter included in the third edition which related exclusively to architectural building, plumbing, heating, and ventilation, has been eliminated, and will hereafter be published in a separate book. Tables of five-place logarithms, of four-place trigonometric functions, and several minor tables have been added. A new method of extracting any root of a number has been inserted and thoroughly explained. This is a most convenient pocket book for all persons interested in mechanical, steam, electrical, railroad, hydraulic, bridge engineering, etc.

BIRTH OF A GREAT AMERICAN RAILWAY.—May 17, 1903, marked the fiftieth anniversary of the incorporation of the New York Central Railroad, a fact interesting in the history of the State of New York, for the consolidation of ten separate small roads into one line that formed a continuous road from Albany on the east to Buffalo on the west, was the beginning that made possible the numerous industrial and commercial developments in the country contiguous to it. The New York Central Railroad Company is the consolidation of the short lines known fifty years ago as the Albany and Schenectady, and the Schenectady and Troy, the Utica and Schenectady, the Mohawk Valley, the Syracuse and Utica, the Syracuse and Utica Direct, the Rochester and Syracuse, the Buffalo and Rochester, the Rochester, Lockport, and Niagara Falls, and the Buffalo and Lockport Railways. It is a picturesque fact that this line traverses the one break in the whole Appalachian chain between the Gulf of Mexico and the St. Lawrence river.

THE NICHOLSON

Distance or Range Finder

The advantages claimed for this device are: FIRST, no mathematical calculation whatsoever required. SECOND, the distance the vessel will be out from the object observed, when abreast, is obtained some time before coming abreast. THIRD, the distance the ship will have to sail to get abreast, and the distance in a straight line to the object are instantly found. FOURTH, simplicity, durability and accuracy. It is so simple that any one not a mathematician, can readily learn to use it. There is nothing to get out of order and its accuracy is self-evident. Every ship master and pilot should have one.

CIRCULAR UPON APPLICATION.

MANUFACTURED BY

NICHOLSON SHIP LOG COMPANY

204 Superior Street, Cleveland, Ohio, U. S. A.

AGENTS

H. F. DANTEZEBECHER, Bourse Bldg., Machinery Dept., Philadelphia, Pa.

ROBERT SNOWDON, 107 High St., Boro, London, S. E., England

W. H. PIERSON, 421 Market St., San Francisco, Cal.

A Handsome Souvenir Letter Opener Free.—The Shelby Steel Tube Company, Pittsburg, Pa., is sending to its customers only, a very handsome letter opener which illustrates not only how readily its material can be manipulated, but also the fine finish which can be put upon it. This letter opener should find favor with any one who appreciates good workmanship.

The Union Iron Works, San Francisco, Cal., is installing a power transmission plant near Reward, Inyo County, Cal., which will transmit power electrically for a distance of about two miles to the mill of the Reward Gold Mine Company, where induction motors will be used to drive a 20-stamp mill, an air compressor, and a rock breaker. The apparatus, which has been purchased from the Westinghouse Electric and Manufacturing Company, Pittsburg, Pa., includes a 20-kilowatt, 3-phase alternator; a 2-horse-power exciter; a type 6 switchboard panel; two 50-horse-power, type C, induction motors. The transmission will be 2,200 volts.

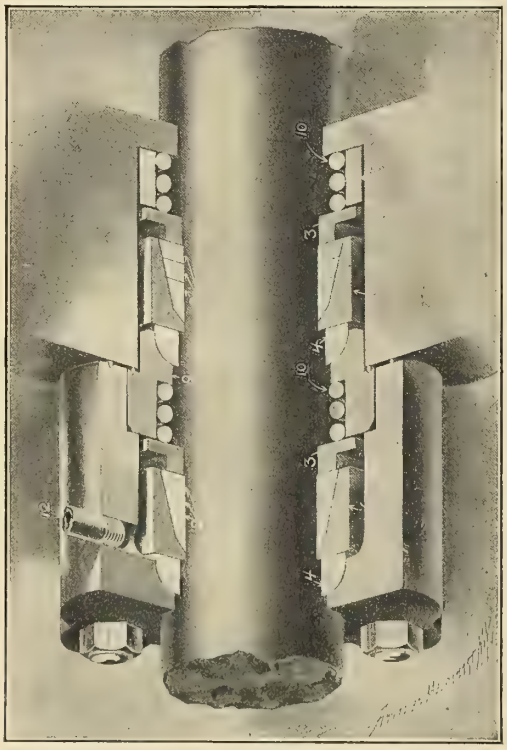
Building Government Ships.—The Polson Iron Works, Toronto, Canada, has under construction at the present time two steel self-propelling lightships for the Dominion government, similar to those used by the United States government. This company is also building two composite steam yachts of torpedo-boat design, fitted with triple-expansion engines and Yarrow boilers, which will have a speed of fifteen miles an hour. This company is also constructing a steel tug about 66 feet long, in which the only woodwork used will be that for the berths, so that she will be absolutely fireproof, and will have four water-tight bulkheads, making her practically unsinkable. There are also two large upper lake cargo boats, the *Sequin* and the *Myles*, undergoing repairs. The value of the work in hand throughout the establishment cannot be much under $500,000. John J. Main, who holds the Canadian rights to the Heine safety boiler, is superintendent of the boiler-building department. The engineering department is in charge of Alfred Duncan. Its naval architect is W. E. Redway, who has been associated with the firm for many years.

Change of Location.—O. C. and K. R. Wilson, ship chandlers, 89 West street, New York city, N. Y., announce their removal to 70-71 West street, city.

Large Order for Elevators.—The Otis Elevator Company, New York, N. Y., has received a contract for eighteen elevators equipped with the push-button system of control, the largest number of elevators of this type probably ever included in a single contract. These elevators are to be installed, one each, in a row of private residences in New York city. It will be remembered that the Franklin Institute recently awarded the John Scott legacy medal and premium to this company for perfecting this type of elevator.

Growing Popularity of the Falls Hollow Iron.—The Falls Hollow Staybolt Company, Cuyahoga Falls, Ohio, is receiving large orders for this iron, its popularity being shown by the fact that it was specified in many large orders received for new locomotive equipment. The company continues to manufacture this variety of iron, which is made of the same high-grade, double refined charcoal material. The Falls hollow staybolt steel has also been specified by the government to be used in several contracts, among which are boilers for the new lighthouse tenders *Magnolia* and *Ivy*, which contracts were recently placed with the Baltimore Shipbuilding and Dry-Dock Company, Baltimore, Md.

Edson Latest Marine Specialties.—A long experience in the manufacturing of marine and yacht appliances by the Edson Manufacturing Company, 255-257 Atlantic avenue, Boston, Mass., has taught that many new ideas may be obtained from customers; therefore the company is always glad to receive calls or communications from naval architects, builders, designers, and to join its experience with theirs in constructing new appliances. It has a complete drafting department and is ready at all times to perfect new ideas which may be suggested to it and to furnish plans and blue prints of the same without charge. The factory of this concern is fitted with the most improved machinery and the employees are workmen of long experience in their particular lines.



Metallic Packing

The success of our packing is shown by the increased orders which we are daily receiving from old as well as new customers, and we attribute this success to the fact that we design packing to suit special requirements.

We design all packings to suit the work for which they are to be applied. A packing designed for 250 pressure would not give good results at 50 pounds pressure. So to make a successful packing we must know the conditions under which the packing is to operate and design it accordingly.

All the rings are in halves, so that it is not necessary to disconnect the engine in making repairs or renewals.

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McKIM GASKET

A profitable Gasket to buy because of its great durability.

Made of rubber encased in soft rolled copper—extra annealed—so that it will accommodate itself to faced or rough joints, and withstand abnormal pressure, temperature or circulation.

Made in all sizes for manhole, handhole and pipe fittings.

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This charming little love story is contained in a 128-page book just issued by the Lackawanna Railroad. The book is profusely illustrated with more than 175 half-tone engravings, and describes the attractive summer resorts along the Lackawanna Railroad, with complete information about hotels and boarding houses. Sent on receipt of 5 cents in stamps, to cover cost of mailing. Address T. W. Lee, General Passenger Agent, Lackawanna Railroad, New York City.

WILL TAKE UP CONSULTING ENGINEERING.—E. W. Roberts, Clyde, Ohio, has resigned his position with the Elmore Manufacturing Company, Clyde, Ohio, to take up consulting engineering again, gas engines and gasoline automobiles to be specialties. Mr. Roberts has had a large experience with gas engines.

ENLARGED FACTORY AND NEW OFFICES.—The Standard Gage Manufacturing Company, Syracuse, N. Y., has had such a great increase in business during the last few months that it has more than doubled the capacity of its factory. It has added fine and large offices, which changes give the company every facility for filling orders promptly and taking the best care of customers who wish anything in the line of steam gages and other such specialties.

A RECENT PURCHASE BY THE CAPILAR COMPANY.—The title and interest in the Peoria Filter have been purchased by the Capilar Company, 136-138 South Fourth street, Philadelphia, Pa., which is now in a position to give all interested in oil filtration a superior filter, which hereafter will be put on the market under the name of the "Capilar." This company feels so confident that its specialties give satisfaction that it will send filters on thirty days' trial, allowing them to be returned at the company's expense should they prove unsatisfactory.

POPULARITY OF ELECTRIC SIGNALS.—The Detroit Electric Signal Company, Detroit, Mich., has secured many orders for its signals, to be used on steamers. These signals are used between pilot and engineer, also for transmitting orders between the different deck departments. They have been installed on Lake steamers *Eastern States, Western States, City of Cleveland, City of Detroit, J. W. Cowles, W. D. Rees*, and many other fine passenger and freight steamers. C. J. Holmes, manager of the company, has had many years' experience as a master and pilot, not only on the Lakes, but on almost all navigable water in the world, his last commission being as chief pilot for the Canadian government on the Yukon river. Howard Fessenden, superintendent of the company, and also the inventor of the system, has been a practical electrician for a number of years, and, by his invention of the electric signal, has brought himself prominently to the fore as an inventor. Mr. Fessenden, after many years of thought and study, has perfected a device by which the pilot can always by a glance at his dial tell just how the engine is working, and learn if his orders have been correctly interpreted. The device, being controlled by the engine alone, cannot be manipulated by any one on the steamer. This safety device has now been made a feature of all the engine-room telegraphs made up by this company, and has enhanced their value many fold. J. H. Carstens, the president of the company, is one of Detroit's solid business men, and it is due to his efforts and enterprise that the signal has commanded the attention of engineers. All the signals made at the Detroit Electric Signal Company are installed under the personal supervision of Mr. Fessenden or of one of his staff of expert electricians.

WESTON STANDARD PORTABLE DIRECT-READING

Voltmeters, Ammeters,

MILLIVOLTMETERS, VOLTAMMETERS, MILAMMETERS, OHMMETERS, PORTABLE GALVANOMETERS, GROUND DETECTORS, AND CIRCUIT TESTERS.

Our Portable Instruments are recognized as **the standard** the world over. Our **Voltmeters** and **Ammeters** are unsurpassed in point of extreme accuracy and lowest consumption of energy.

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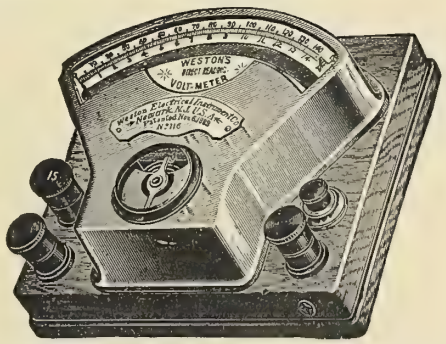
BERLIN:—European Weston Electrical Instrument Co., Ritterstrasse 88.
LONDON:—Elliott Bros., Century Works, Lewisham.
PARIS, FRANCE:—E. H. Cadiot, 12 Rue St. Georges.



WESTON Standard Portable Direct Reading Voltmeter.

INSTALLATION OF OTIS ELEVATORS.—The Otis Elevator Company, 71 Broadway, New York city, N. Y., is to install eight high-pressure, inverted-plunger hydraulic passenger elevators in the Bessemer Building, Pittsburg, Pa., and in the Phipps power house adjacent thereto. The latter building supplies power to the various buildings in the neighborhood owned by Henry Phipps. These elevators are of the same type as those in the Prudential Building, Newark, N. J., and those to be installed in the new Metropolitan Life Building, New York, N. Y.

THE PICH PROCESS FOR BRAZING CAST IRON.—The paper of the evening read before the American Society of Mechanical Engineers, New York, was devoted to this process of brazing, special further information being given by J. S. L. Alexander, of the American Brazing Company, Philadelphia, Pa., which company controls the process in this country. Mr. Alexander showed by actual operation the process of brazing by this method. An apparatus having been especially fitted up for the purpose, a couple of broken cast-iron specimens were brazed with a preparation known as ferrofix, which is a dark-brown powder. It is really a metallic oxide, the action of which during the heating of the metal is to burn out the carbon in the vicinity of the joint. This powder is mixed with a liquid and in the form of a paste is applied to the ends to be joined, these having been, of course, thoroughly cleaned. The parts are then brought together, the paste acting, in a way, as a cement to hold them in place, and they are placed on suitable supports and the gas or other flame is applied as in ordinary brazing. The metal being brought to a temperature of about 1,800° Fahr., a flux of either powdered borax or some similar material is applied and then the spelter is put on. The brass used may be hard or soft, according to the material to be brazed. When properly applied this covers the ends of the parts thoroughly and a positive and smooth joint is the result. The spelter evidently penetrates the iron for some little distance, as traces of it have been detected under a powerful glass fully three inches from the joint.

The Ideal Pigment

TRADEMARK FEROX REGISTERED JULY 8, 1902.

The only adequate protection for Ships, Bridges, Structural Iron and Steel Work

Mohawk Paint & Chemical Co.

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Patent Iron Oxide Paints

98% Pure

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The only **Pure** Iron Oxide Paint.

The only Non-Crystalline Oxide of Iron

Being porous and spongy it absorbs and retains the oil and makes a permanent, durable, unchanging, protective coating for wood and metals.

It is rust-proof and not subject to chemical action.

Unequalled for submarine use.

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A Great Name
A Great Reputation
A Great Motor

2 Cylinder 4 Cycle Slow Speed

Write for prices now while we can fill your orders.

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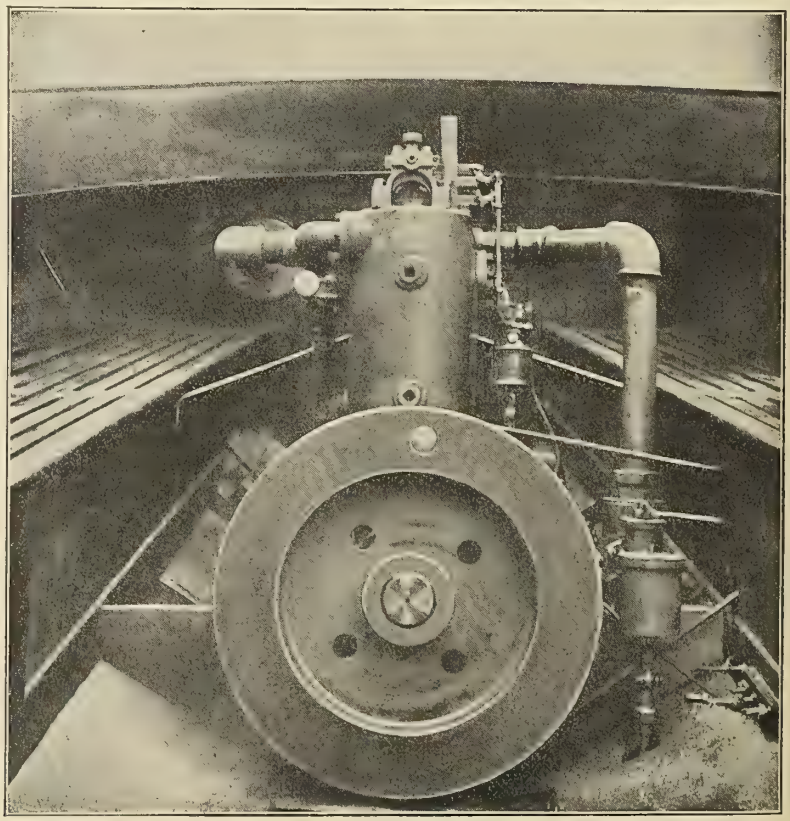

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" 43, Thos. J. Coyle, 627 Superior St., Port Huron, Mich.
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" 70, Chas. T. Smith, 536 1-2 Commercial St., Astoria, Ore.
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" 73, Ed. M. Donahue, 1308 Cherry St., Green Bay, Wis.
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" 77, John P. Hall, 1215 Huron St., Manitowoc, Wis.
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" 94, George R. Jones, Box 222, Washington, N. C.
" 95, P. J. McMahon, P. O. Box 199, Key West, Fla.
" 100, Thos. F. Sullivan, Honolulu, H. I.
" 101, Thos. J. Hanlon, Box 765, Norfolk, Va.
" 102, Fred W. Linsemeyer, 210 Clinton St., So. Haven, Mich.
" 103, A. E. Pittman, P. O. Box 378, Newbern, N. C.

TRADE PUBLICATIONS.

Gasoline and kerosene launches are described in a folder issued by W. R. Osborn, Croton-on-Hudson, New York. Several illustrations give views of the engines from all sides, and the general style and special features are described in the text. There are also tables of sizes and other information.

"A Short Story of Eli Whitney" is the title of the latest monthly booklet issued by Wyman and Gordon, Worcester, Mass. This company makes high-grade drop forgings on orders only, and sends out monthly these short stories of inventors, including a short description of their facilities of equipment.

The White Star Valve is described in a booklet distributed by the William Powell Company, Cincinnati, Ohio. This booklet describes the valve in detail and makes many claims for it, because great care is exercised in the construction of these valves and the distribution of the metal where it is most required.

The Marine Iron Works, Station A, Chicago, Ill., has just issued a new illustrated catalogue of its products. This company makes a specialty of designing and building modern marine machinery. The catalogue also illustrates thirty-five different sizes and types of screw-propeller engines, and thirty-six different paddle engines, all of modern type.

The Lundell fans are thoroughly described in a catalogue issued by the Sprague Electric Company, 527 West Thirty-fourth street, New York, N. Y. It is claimed that this fan has proven a success, because its design and construction are of the highest type to give efficiency and durability. They are also economical in current consumption, and are made in various types and sizes.

The spiral-riveted pipe manufactured by the American Spiral Pipe Works, 1173 and 1201 South Paulina street, Chicago, Ill., is fully described in a catalogue recently issued by them. It is one of the most complete catalogues that have ever been published on this subject, and, in addition to its general interest, it also gives twelve pages of valuable tables and information, which hydraulic engineers and others will find very convenient.

The Watson-Stillman Company, 204 to 210 East Forty-third street, New York, N. Y., is issuing a catalogue showing a large variety of tools manufactured by them. Each cut shown represents from one to about twenty sizes of tools, a full and complete description of which is kept by them in the form of loose sheets for distribution as required. These sheets are bound together in various combinations to suit the demands of correspondents as nearly as possible. The catalogue includes machinery and tools for a great many lines of business.

Marine motors manufactured by the Mianus Motor Works, Riverside, Conn., are thoroughly discussed in a descriptive catalogue published to show motors which were built because of a demand for a larger marine gasoline engine. This company has decided to add to its list an engine of the four-cycle type. It also manufactures various kinds of hoists and other apparatus to be used in connection with their engine for both stationary and marine work. It also makes regular sizes of two-cycle engines, and has added this year several important improvements, which are described.

De Laval Steam Turbine Company, 74 Cortlandt street, New York city, N. Y., is mailing a catalogue describing steam turbines which it manufactures. This turbine is adapted to classes of work now performed by reciprocating engines, and it is practically suited for driving high-speed machinery of all kinds where low steam consumption is required. It is manufactured in the following types: Steam turbine motors, direct-connected steam turbine dynamos, steam turbine pumps, high-pressure steam turbine pumps, electro-motor pumps, steam turbine boilers, marine lighting sets, train-lighting equipment, and locomotive-headlight equipment.

When writing to advertisers please refer to MARINE ENGINEERING.

Monthly Stock List.—Wickes Bros., Saginaw, Mich., are issuing their monthly stock list of new and second-hand boilers, engines, and machinery.

A Complete Tool Catalogue.—The L. S. Starrett Company, Athol, Mass., is mailing Catalogue Number 17, containing 176 pages. This catalogue is most complete in arrangement and shows a full line of mechanical tools. It is also very artistic and gives handsome illustrations of each tool manufactured by this company.

"The Source of the Electric Light" is the title of a catalogue issued by the Crocker-Wheeler Company, Ampere, N. J. This catalogue contains much interesting matter concerning generators, and tells why it is largely true that the best product comes from the manufacturing concern which gives attention to but few branches of any general industry.

"Selling My Goods" is the title of a folder published by Edmund Bartlett, advertising specialist, 150 Nassau street, New York, N. Y., who makes a specialty of advertising for manufacturers, jobbers, and wholesalers. He also assists advertising departments install follow-up systems, writes designs and illustrations, and prints advertising literature of all kinds, issuing anything in the general marketing of their goods.

Hunt's Industrial Railways are fully described in a catalogue issued by C. W. Hunt Company, West New Brighton, Staten Island, N. Y. This catalogue describes fully the industrial railways for manufacturing establishments, or wherever a railway for handling material at little trouble and expense is needed. This catalogue also shows cuts of the various cars, railway tracks, switches, electric locomotives, in addition to several cuts of their specialties as they appear in some well-known factories in the United States.

"Hitch Your Wagon to a Star" is the request made by the Goheen Manufacturing Company, Canton, O. The particular star that they would direct the reader to is a protective agent from the ravages of rust and corrosion, for iron and steel structures. The problem of protecting important steel structures is by no means solved, and a wide field is open for experiment and research. This company gives a very interesting discussion of the subject in this catalogue, which should make it appeal to progressive engineers, architects, and large paint consumers.

The Bashlin Company, Warren, Pa., is mailing a catalogue describing the "Perfect Valve." This company makes many claims for the superiority of this valve, as it embodies the correct principle of construction for durability and service, having renewable parts, disk, and seat ring. The illustrations show guides are used to center the disk and strengthen the body, making it more durable, maintaining the alignment, and preventing the rattling of the disk caused by the pulsation of the steam passing through a partly-opened valve. The principle of construction and the advantages of this type are detailed in these pages.

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covers all that's good in PACKING. First cost low—lasts twice longer—saves one-half season's expense.

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The Price is Moderate

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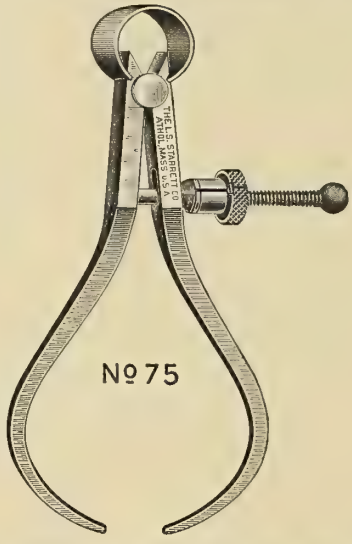
Uses Calipers, he should have only the best. We make them, both inside and outside, from 2½ to 24 inches. The No. 75 style is made in 5 sizes, from 2½ to 6 inches.



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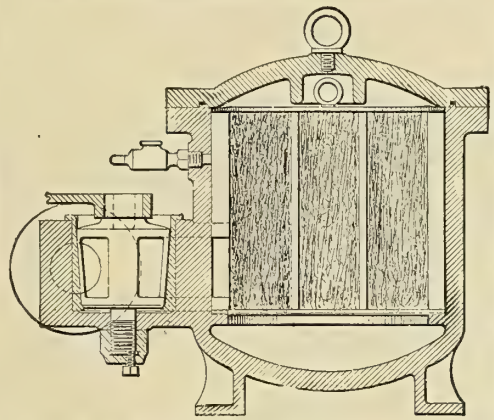

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The Morehead Trap is thoroughly discussed in a very handsome catalogue issued by the American Blower Company, Detroit, Mich. Many claims are made for this trap. Among the numerous advantages of marine traps in general, those of the Morehead trap in particular are fully set forth in these pages, all of which will prove interesting and profitable reading for any one owning or having the care of steam plants.

American Air Compressors are thoroughly discussed in a catalogue now being distributed by the American Air Compressor Works, 26 Cortlandt street, New York, N. Y. This catalogue shows air compressors of every type, for all pressures and for every purpose to which air is applied. The company presents this catalogue as an illustrative and descriptive treatise on the output of the American Air Compressor Works; and claim that its machines embody simplicity, durability, efficiency, and economy, and are especially designed for maximum strength with minimum weight. This catalogue shows many types of air compressors.

Marine Iron Works, Claybourn and Southport avenues, Chicago, Ill., is distributing Catalogue No. 16. This company makes a specialty of designing and building special marine work in engines, boilers, and machinery.

Money in the Stack.—The New York Blower Company, Bucyrus, O., is issuing a leaflet explaining the cause of great loss to manufacturers in not having the proper fan equipment which would serve as money-savers. This catalogue describes the centrifugal fan as an efficient draft producer. It also illustrates the largest flywheel ever built for mechanical draft.

"A Few Points on Grinding," written by Mr. Chas. H. Norton, of the Norton Grinding Company, and published by the Norton Emery Wheel Company, Worcester, Mass., has been published in booklet form and gives many important hints. No subject should be more interesting to the metal workers than that of commercial grinding, and the recent rapid changes in methods of producing cylindrical work accurately and rapidly at very much reduced cost give the article written by Mr. Norton, who has devoted many years of exclusive study to grinding machines, more than ordinary value.

"Dwarf in Size, Giant in Power" is the title of a catalogue issued by the Bausch and Lomb Optical Company, Rochester, N. Y. This catalogue shows the field of the stereo-binocular compared with the field of the ordinary binocular of the same power. This lens is the invention of Professor Abbe, of the Carl Zeiss Optical Works, Jena, an institution renowned for original investigation in optical science, as well as in the manufacture of optical instruments. This catalogue will give all information bearing on these lenses, as well as proving attractive to any one interested in the construction of prism binoculars.

BUSINESS NOTES.

A Popular Arm Sander.—The H. B. Smith Machine Company, Smithville, N. J., has for many years been building arm sanders which have always had solid frames; frequently it has had calls to pipe them and to furnish a slide over the head for removing the dust. The difficulty in this led to the design of a hollow frame so arranged as to form a perfect dust conveyer. This sand disk extends just below the head, and all the joints in the lower hollow framing are made air-tight, so that the exhaust which is applied at the ends next to the dust can draw out all the dust created by the sand in it. The machine may be connected to the piping system of a shop, or a special fan may be provided for it.

Electric Motors and Generating Sets.—Over forty years ago the B. F. Sturtevant Company, Jamaica Plain, Boston, Mass., established the first blower manufactory in the United States. Within ten years, however, the necessity for equipping large fans with the means of driving led it to designing and building a line of distinctively fan engines. For thirty years, through a most varied experience and under the most trying conditions, these engines have been developed to their present perfection. Recently there has been a rapid increase in the use of electricity as a motive power, which has opened the way for an electrically-driven fan, and the fan built for the one or for the other. The opportunity was recognized, and this company established an electrical department, designed a full line of fan goods, and then gave the purchaser an opportunity to choose between the engine-driven and the motor-driven fans. It now has patterns for over 100 sizes and types of engines, ranging from 2 to 250 horse power, and a record of over 8,000 engines sold since it has entered this field. In its various motor designs it has likewise equipped an equal variety. A corresponding line of generators is also built by utilizing the essential parts of these motors. Both engine and motors have been developed under the exacting conditions incident to fan practice, namely, high speed and constant operation with comparatively little attention.

POPULARITY OF THE OTIS ELEVATOR.—The Duke of Marlborough, following the custom of other progressive members of the British aristocracy, has ordered two electric elevators with the push-button control from the Otis Elevator Company, New York, N. Y. These are to be installed in his town house, Blanford House, Curzon street, London.

OPENING OF CLUB ROOMS.—The evening of May 22 was a conspicuous one in the history of the Weston Electrical Instrument Company, Waverly Park, Newark, N. J., for on that day the directors of the company made good its promise and turned over to the employees the handsome club room recently constructed. The occasion was commemorated by a reception and ball, to which each employee and a friend were invited, also a large number of the friends of the directors, as well as many prominent city and State officials, including the Governor of the State.

MANY COMPLIMENTARY LETTERS.—Roberts Steam Piston Packing Company, Philadelphia, Pa., is receiving many complimentary letters regarding its packing, among which is one from G. Ritchie, chief engineer Young's Amusement Company and Young, Atlantic City, N. J. In this letter Mr. Ritchie says: "We have had the Roberts steam packing rings in use since February 24, 1903, and I find an enormous increase in power and about 17 per cent. saving in fuel over the old-style packing. The merits of this ring have proven its full worth. It is a saving to any one who may see fit to use it. We will be pleased at any time to give you a personal interview when it is convenient to call at our place."

A MODERN FACTORY.—The Dan River Power and Manufacturing Company will equip its cotton mill at Danville, Va., with electrical machinery throughout, and for this purpose has recently ordered from the Westinghouse Electric and Manufacturing Company, Pittsburg, Pa., two 750-kilowatt and one 500-kilowatt, 6,600-volt generators, together with two 125-kilowatt exciters, each generator to be direct-connected to an independent water wheel. The current so generated is to be transmitted a distance of 3,000 feet to a step-down transformer station, in which will be located four 600-kilowatt, Westinghouse, oil- and water-cooled transformers, which will step down the 6,600 volts to approximately 500 volts. From these transformers the current will be carried to a sub-station switchboard, from which lines will run through an underground vitrified conduit, transmitting the current to the various buildings, where it will be used for driving the numerous Westinghouse, type "C" induction motors which will drive the cotton-mill machinery.

A LARGE INCREASE IN BUSINESS.—The Philadelphia Pneumatic Tool Company, Philadelphia, Pa., in order to take care of its large increase in business in the middle West, has employed J. F. Ahern, formerly with the Scully Steel and Iron Company, to assist A. G. Hollingshead, Western sales manager for this company. It has also appointed Mr. Griner, late assistant manager of the Chicago Pneumatic Tool Company, to a position in the main office of the Philadelphia Pneumatic Tool Company. This company reports large orders for chipping hammers, riveters, and drills, in the Craig Shipbuilding Company, Toledo, O.; Willamette Iron and Steel Company, Portland, Ore.; Kewanee Steam Water Works; United Gas and Croton Company; J. D. Conell Iron Works, New Orleans, La.; Chandler and Taylor Company; Allis and Chalmers Company, and others. This company has also received large orders for rotary drills and riveting hammers for both foreign and domestic shipment. Sales have been made to the following: Tennessee Coal and Iron Railway Company; Great Northern Railway Company; Lake Erie and Western Railroad; Lake Shore and Michigan Southern Railway; Illinois Steel Company; Detroit Shipbuilding Company; New York Navy Yard and Mare Island Navy Yard. Foreign shipments have been made to London, Paris, Brussels, Berlin, Copenhagen, and Milan.

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"MARINE TINTS"

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CONDENSER TUBES

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"BENEDICT-NICKEL"

ELECTROLYSIS is positively resisted because "Benedict-Nickel" is an alloy of nickel and copper.

CORROSION is impossible, as the tubing is so perfectly homogeneous.

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Buffalo Fan System

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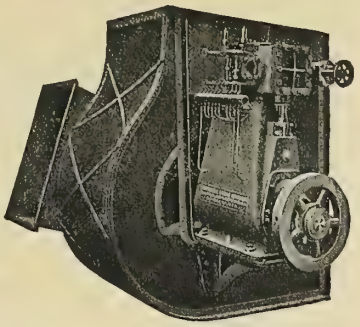
Forced Draft and Ship Ventilation

Air Supply Positive and Uniform.

Operation is Independent of Weather Conditions.

Types to Meet All Conditions.



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PLEASURE TOURS.—To meet the demand for information concerning tours to the Adirondack mountains, Thousand Islands, Niagara Falls, St. Lawrence river, Lake Champlain, Lake George, the Green mountains, etc., that are to be made in from two to fifteen days, the New York Central has reissued Four-Track Series No. 8, entitled "Two to Fifteen Days' Pleasure Tours." This publication is a booklet of 80 pages, and gives the itinerary and fares to all the above resorts, and, in addition, just the information necessary to the tourist in arranging a trip. Contained in this booklet are thirty-seven maps of the various roads that enable the prospective traveler to know before starting on his journey just what territory he will cover. This book will be sent free on receipt of a two-cent stamp by George H. Daniels, general passenger agent, New York Central and Hudson River Railroad Company, Grand Central Station, New York, N. Y.

RECORDING THERMOMETERS.—The recording thermometers made by the Helios-Upton Company, Peabody, Mass., are gaining deserved popularity. These thermometers register accurately the various changes of temperature, and are indispensable for hot drying rooms, dry kilns, cold-storage plants, and other places where certain fixed ranges of temperature must be maintained and a record kept. The recording dial for either daily or weekly service is 6 1-2 inches in diameter, with a recording area 4 inches wide. The clock is an 8-day movement, made by the Seth Thomas Company. The record is best made by the special recording ink that accompanies the apparatus, and may be obtained from the company at any time. The bulb extension can be made in any length desired up to 30 inches. It is fitted with a 1 1-4-inch pipe thread, for insertion in circulating pipes, tanks, etc. A padlock is furnished with each instrument, to prevent any unauthorized person from tampering with it.

EXTENSIVE ADDITIONS TO ELECTRIC PLANT.—The large increase in sales of integrating wattmeters and other electrical recording instruments made by the Westinghouse Electric and Manufacturing Company has made necessary an extensive addition to the Newark, N. J., works of this company. By appreciating the economical features and value of concentration, the motor branch of the electrical manufacturing business is here given special attention. This factory is one of the finest and best-equipped of its kind, and the extension now being built would practically double its size and productive powers, while the mechanical features mark the perfection of their kind; equal attention has been given to the question of comfort and convenience of the three thousand employees.

A BUSY YARD.—With the new 16,000-ton battleship *Vermont* the Fore River Shipyard, at Quincy Point, Boston harbor, will be well filled up with work, and the part of the building beach now in regular use will be fully occupied. The torpedo-boat destroyer *Macdonough,* accepted by the government last month, is awaiting delivery; the cruiser *Des Moines* is getting the finishing touches at the fitting-out dock, and will be given her trials in about a month; and the six-masted steel schooner *William L. Douglas* will be put overboard early in August. The keel of the big freight steamer for the Fall River line is already on the blocks, and that of the passenger boat will be laid this week. Three of the steel car floats just ordered for the New Haven Railroad are being placed between the Fall River freighter and the six-master, and the fourth is to take the schooner's place as soon as she is launched.

ELECTRICAL EXHIBITION.—The National Electrical Contractors' Association's third annual convention, together with an electrical exhibition of apparatus and supplies, at the Light Guard Armory, Detroit, Mich., will be held on Tuesday, Wednesday, and Thursday, July 14, 15, and 16, 1903. The exhibition will include all standard and special supplies and apparatus used for electric housework, lighting, power work, and general electric construction. Arrangements have been made to provide fully for all needs of exhibitors. The convention will be held in the armory, thus assuring the attention of all delegates and visitors here. The association membership includes the leading electrical contractors of fifteen States, who purchase annually between $5,000,000 and $10,000,000 worth of material and supplies. This exhibition provides manufacturers and agents an unexcelled opportunity to show their goods to the contractors of the country, including not only the association members, but also many others who will attend the convention. Applications for space will be considered in the order in which they are received, and the Exhibition Committee will endeavor as far as possible to meet wishes regarding the amount and location of space. Application should be mailed to Exhibition Committee, Frank J. Myer, chairman, Detroit, Mich.

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Distance or Range Finder

The advantages claimed for this device are:

FIRST, no mathematical calculation whatsoever required. SECOND, the distance the vessel will be out from the object observed, when abreast, is obtained some time before coming abreast. THIRD, the distance the ship will have to sail to get abreast, and the distance in a straight line to the object are instantly found. FOURTH, simplicity, durability and accuracy. It is so simple that any one not a mathematician, can readily learn to use it. There is nothing to get out of order and its accuracy is self-evident. Every ship master and pilot should have one.

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ROBERT SNOWDON, 107 High St., Boro, London, S. E., England

W. H. PIERSON, 421 Market St., San Francisco, Cal.

Thrust Bearings for Propellers.—The Bantam Manufacturing Company, Bantam, Conn., is now issuing what is known as the "Rooster Catalogue." It gives a full description and the dimensions of the company's various types of ball and roller bearings and shows thrust bearings for propellers, launches, and all classes of marine work. Everything is manufactured that is wanted in this line of marine engineering.

A Well-known Packing.—It is an old saying that an article of merit will advertise itself and find its own customers. It goes without saying that this has been the case with the Garlock high-grade standard packings for steam, water, gas, air, ammonia, and all classes of liquids. The Garlock packings are made by the Garlock Packing Company, Palmyra, N. Y., and are used in all parts of the world. This company has found it necessary to establish an office and salesroom at Hamburg, Germany, for the purpose of taking care of its large and increasing European trade.

Flange-joint Gaskets.—The history of the flange-joint packing made by H. W. Johns-Manville Company, New York, has been of necessity closely identified with, and influenced by, that of all steam service. As the pressure and temperature have increased, the earlier forms of flange gaskets have become less and less efficient, necessitating continual improvements to meet the severity of modern requirements. For some years the engineer has depended upon rubber composition and metallic gaskets, which, under certain conditions, prove unsatisfactory. A common way of packing flanges is with gaskets cut from rubber or composition sheet packing. This method cannot be recommended, as neither of these materials can stand high pressure nor high temperature with any reliability, but will char and blow out under high temperature and vibration of the pipe line. The metallic gasket is inefficient principally because of its inelasticity. It hardens when compressed under high temperature, and as the pipe line cools the metallic gasket fails to compensate for the contraction, the vibration loosens the joint, and a leak results which is both annoying and expensive.

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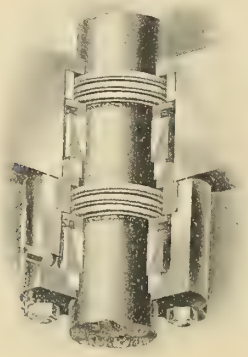
All our packing rings are in halves

Not necessary to disconnect engine in making repairs or renewals; just drop the gland, take out old metals, replace them and put the gland back. All these rings are readily removed by merely lifting them out of the cup; it is not necessary to quarry out the contents of stuffing box. ∴ ∴ ∴



The United States Metallic Packing Company

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Work at Fore River.—The battleships *New Jersey* and *Rhode Island* are officially credited with a greater percentage of completion than the vessels of their class started in other yards at the same time, and, in spite of the delay caused by the Navy Department's recent change of plans for the purpose of strengthening the gun foundations on the heavier vessels, will be ready to take the water in December or January. The working force at Fore River is now close to 3,000 men—twice the number of a year ago—and is increasing every day; but the additional work on the new big contracts will make it necessary to enlarge it very considerably.

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Containing 32 pages, giving sample questions for marine engineers and firemen, taken from ***"LUCAS' QUESTIONS AND ANSWERS FOR MARINE ENGINEERS,"*** *relating to the theory, practical operation and care and management of marine engines, boilers, and auxiliary machinery. Write to-day for this valuable booklet, also complete catalog of the* ***"Marine Engineer's Library,"*** *consisting of 7 volumes, price $12. Supplied on one dollar monthly payments. Address*

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Hay's Water-proof Marine Glue.—The superiority of this glue over pitch or other glues for paying ships' decks and side seams, coating walls, floors, railway sleepers, posts, fans, refrigerator floors, iron bridges, etc., is evident by the testimonials that have been furnished by those who have tested the wonderful adhesive properties, durability, and elasticity of this glue. Hay's water-proof marine glue retains its elasticity under all conditions, successfully resisting the effect of heat, cold, moisture, and excessive dryness. This glue is used by the British, French, United States, German, Japanese, Chinese, and other navies, the P. and O. Royal Mail, Union Castle, White Star, and various other steamship lines, as well as by the largest shipbuilders in the world. The *Oceanic* and *Celtic*, among other large liners, of recent construction, were relapped with this glue. It is sold by Burney and Smitn, 81-83 Fulton street, New York, N. Y.

Ventilating Equipment for Turkish Cruiser.—A cruiser now being built for the Turkish government by Messrs. Wm. Cramp, Philadelphia, Pa., will embody the latest improvements in naval construction, and will be an effective fighting machine in every way. One feature which has been looked after with particular care is the ventilation, which is of very great importance in a vessel serving in tropical or sub-tropical waters. Nine electrically-driven centrifugal fans are provided to ventilate the hull of this vessel. These fans are capable of supplying 4,260 cubic feet of air at 1 ounce pressure when running at 822 r. p. m., and 1 1-2 ounces when running at 1,010 revolutions. The 50-inch fan will supply 3,690 cubic feet at 1 ounce pressure at 660 revolutions, and 1 1-2 ounces at 808 revolutions. The four "Monogram" fans can supply 2,110 cubic feet of air at 1-ounce pressure running at 822 r. p. m., or at 1 1-2 ounces when running at 1,030 r. p. m. The entire ventilating equipment above described was furnished by the B. F. Sturtevant Co., Boston, Mass.

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ABENDROTH AND ROOT MANUFACTURING COMPANY, 99 John street, New York, N. Y., is issuing a catalogue fully describing the Root Water-Tube Boilers, as well as the Root Spiral Riveted Pipe and A and R compressed exhaust tanks. This catalogue contains many illustrations of the water-tube boilers. The entire weight of the front ends of the tubes and drums rests on a swing beam and is not hung from lugs or bands attached to overheated drums. This is a very important provision to allow for expansion or contraction and one which makes the boiler flexible as a whole.

BUFFALO FORGE COMPANY'S ACQUISITION.—The Buffalo Steam Pump Company, whose works are at North Tonawanda, N. Y., has been purchased by Messrs. Wm. F. and Henry W. Wendt, who are also owners of the Buffalo Forge Company, Buffalo, N. Y., and of the George L. Squier Manufacturing Company. The North Tonawanda works of the steam pump company are to be continued as heretofore, with the main offices in Buffalo.

A COMPLETE HEATING AND VENTILATING EQUIPMENT.—The United Engineering and Foundry Company, Pittsburg, Pa., has installed a complete heating and ventilating equipment in the roll shop of the Lincoln foundry department. The apparatus, which was furnished by the B. F. Sturtevant Company, Jamaica Plain, Boston, Mass., consists of a steel-plate exhauster direct-connected to a horizontal side-crank engine; the exhauster drawing air from out of doors to a large steam heater built up in sections of 1-inch pipe, one of the sections receiving the exhaust from the fan engine.

WILL MAKE LOCOMOTIVE INJECTORS.—Walworth Manufacturing Company, Boston, Mass., has purchased all the right, title, and interest, and has commenced the manufacturing of locomotive injectors, formerly a part of the business of the National Tube Company. As a means of giving notification of this fact, and for the convenience of the trade, it has issued a descriptive catalogue giving full information and prices. This book is so written as to be of value to master mechanics and superintendents of railroads and steam plants, and will also assist engineers in determining parts and arrangements of injectors in ordering repairs.

H. E. MAXFIELD AND COMPANY.—H. E. Maxfield, formerly associated with centrifugal pumping appliances, has now opened business under the firm name of H. E. Maxfield and Company, 135 Liberty street, New York, N. Y. This will give Mr. Maxfield an opportunity to put in force many ideas which are necessary to a successful business career. He will also be the resident agent of many manufacturers. Among the well-known companies represented by him are: Racine Hardware Company, Racine, Wis., high-speed, vertical engines, this company also building an excellent line of specialties for marine engineers, etc.; the Contractors' Plant Manufacturing Company, Buffalo, N. Y., hoists and horse powers, etc.; the New Era Iron Works Company, Dayton, O., manufacturers of gas and gasoline engines. Mr. Maxfield will give his personal attention to inquiries addressed to the firm, and is in a position to make immediate shipments.

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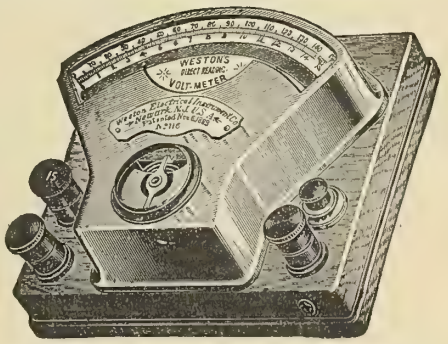

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The Long-arm System.—The safety electric watertight power door, made by the Long-Arm System Company, Cleveland, O., is the outcome of some five years' work and experience in this line in equipping ships with such devices. This door and its safety electric-power gearing have, after many tests, been adopted by the United States government.

The Keystone Blue Print Company, 910-912 Filbert street, Philadelphia, Pa., is distributing a catalogue which will interest those who have to do with electricity, as it is devoted to the subject of reproduction by artificial light. The several features of this process are fully described. This invention is a recent one and has attracted much attention.

Pneumatic Hammers and Piston Iron Drills.—The Rand Drill Company, 128 Broadway, New York city, N. Y., reports that its business in pneumatic tools has surpassed its most sanguine expectations. Plans are now being drawn for an extensive enlargement of the Rand Drill Company's works to meet the increased demands.

Will Make Compressed-air Machinery.—J. L. Pilling, formerly with the Port Huron Air Tool Company, Port Huron, Mich., has erected a building at Bucyrus, O., equipped the same with modern machinery, and will begin at once the manufacture of compressed-air machinery under the firm name of Pilling Air Motor Company.

Pneumatic Tools.—The Philadelphia Pneumatic Tool Company, Philadelphia, Pa., reports having recently furnished all the pneumatic tools for the erection of forty-five steel bridges which the Southern Pacific Railroad Company is erecting incident to the straightening of its line between Ogden, Utah, and Reno, Nevada. Large orders for chipping hammers, riveters, and drills have also been received from the Baldwin Locomotive Works, American Car and Foundry Company, Pennsylvania Steel Company, American Bridge Company, Vulcan Iron Works, Toledo, and the Lake Shore and Michigan Southern Railroad.

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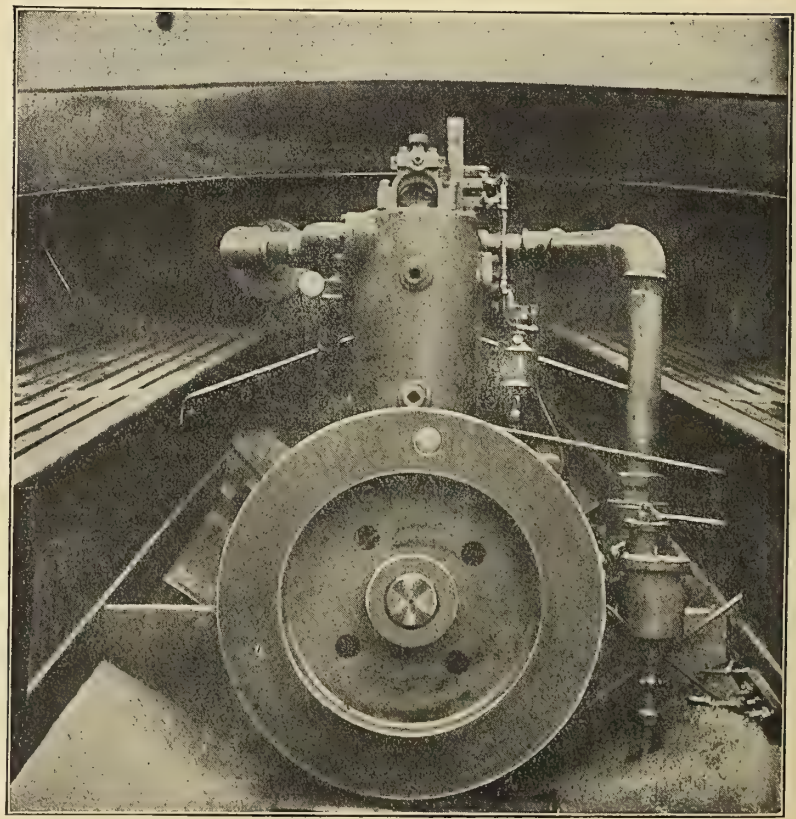

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TRADE PUBLICATIONS.

The George L. Squier Manufacturing Company, engineers and manufacturers, Buffalo, N. Y., is mailing Catalogue 62 E. The purpose of issuing this catalogue is to explain briefly the merits of the Squier tortilla mills and corn shellers, giving illustrations and description of several types. The variety of uses for which these mills are employed is extensive, and in many instances the service is severe.

"Something New as Applied to Belt Conveyers" is the text of a catalogue issued by John A. Mead Manufacturing Company, builders and erectors of labor-saving machinery for economically handling many types of material in bulk or package. Among the advantages of belt conveyers described in this catalogue and as claimed by the company are its noiseless operation, requiring least labor for supervision, and its cheapness of installation.

Richter's Instruments of Precision are thoroughly discussed in a catalogue recently issued by Eugene Dietzgen Company, New York, N. Y. Among the many claims for these instruments is one that they are original in shape and construction and are of sterling and serviceable quality. Many cuts are shown and a complete description given of the instruments, making this catalogue very valuable to those having to do with drafting instruments.

Office furniture is thoroughly described in a leaflet issued by Yawman and Erbe Manufacturing Company, 360 Broadway, New York, N. Y. The cuts shown therein represent many varieties of desks and chairs. The company has changed its stock number, so that the numbers shown in these sheets do not exactly indicate the identical desk illustrated. These examples, however, are absolutely typical of the character of the Yawman and Erbe Manufacturing Company's furniture.

The Nash Regulating Valve Company, Detroit, Mich., is presenting a very complete catalogue to the engineering trade, with the desire to draw particular attention to its line of separators. It is a well-known fact that numerous attempts have been made to produce an efficient type, and, in attempting to obtain this, every other point in connection with the device has been sacrificed, even then without accomplishing results worthy of being called a vertical separator. This catalogue shows many cuts of the vertical and horizontal type of the Greenaway patent separator.

"Nearly All Kinds" is the title of a pamphlet issued by the Stamford Foundry Company, Stamford, Conn., the purpose of which is to show that the shipyard and yacht-caboose ranges made by this company can be used on almost every variety of vessel. A list of the vessels using them cannot be made, as a very small part of the names could be obtained. This leaflet shows many handsome cuts of well-known yachts and schooners, among which can be named the schooners *George W. Wells, Eleanor A. Percy, Wm. C. Carnegie, Thomas W. Lawson, Fannie Palmer,* and the steam yacht *Empress of Bristow.*

The Buffalo Gas Blowers and Exhausters are described in a booklet issued by the Buffalo Forge Company, Buffalo, N. Y. These blowers and exhausters are designed and constructed to withstand the strain of high pressure in cases where it is necessary that they be run for a long and uninterrupted period. In external appearance the Buffalo gas blowers and exhausters are not unlike other types of Buffalo fans, but the design and construction of the wheels and other parts are of special formation and afford results that are impossible with the ordinary type. The pages of this catalogue show a few of the different types of Buffalo gas blowers and exhausters with various discharges. These blowers may be provided with adjustable body, single, double, perpendicular or horizontal engine, and their arrangement as to hand and discharge may be varied to suit exigencies.

When writing to advertisers please refer to Marine Engineering.

BUSINESS NOTES.

Will be Represented in Richmond, Va.—The Glacier Metal Company, New York and London, has established an office in Richmond, Va., in order to handle the increasing trade in this section of the United States. The Glacier is a high-grade babbitt used in all parts of the world for high-speed and heavy-running machinery.

A New Warehouse.—The Midvale Steel Company, Philadelphia, Pa., has opened a warehouse at 161 South Jefferson street, Chicago, Ill., and is prepared to ship promptly from stock all sizes and grades of tool steel, including a full line of regular and special self-hardened and tool-holder steel. It is also prepared to fill orders promptly for all grades of machinery, spring and file steel. This warehouse will be in charge of John B. McKay, who will give all orders his personal attention.

A Reliable Packing.—The Joseph Dixon Crucible Company, Jersey City, N. J., reports many large sales of its silica graphite paint, which is proving most satisfactory wherever tried. In using this paint all surfaces must be thoroughly cleaned, free from loose scale, dirt, and moisture. The entire surface should then be given a well-applied coating of silica graphite paint; parts to be in contact and enclosed should receive before assembling a coat of the same material; places damaged by abrasion should be retouched. The entire work is then given a second coating of a color different from the mill coat. No adulterating or thinning is necessary with this paint, as it comes ready for use.

Coal Handling in Large Plants.—The C. W. Hunt Company, West New Brighton, Staten Island, N. Y., fully realizing the large expense attendant upon the handling of coal and ashes in power stations, has put on the market various devices whereby a great reduction in the expenses of operating the power plant has been made. This invention includes boilers of great capacity and automatic stokers, which have reduced the cost of steam generation to such an extent that the cost of handling the coal and ashes becomes a more prominent factor and justifies an expense for installing appliances that a few years ago would scarcely have been considered. Power plants are not usually erected in an ideal situation; they are located where property can be purchased or made available. The peculiar or unfavorable conditions necessitate more complex and expensive coal-handling machinery and require at the same time greatest economy in the daily operation of the plant. This company has large shops, thoroughly equipped with special machinery for manufacturing coal-handling machinery, and an efficient engineering department for adapting to any given case the latest and best methods of handling coal. It will be glad to receive plans and descriptions of proposed plants from parties desiring to make improvements, to which it will take pleasure in adding such information as is at hand.

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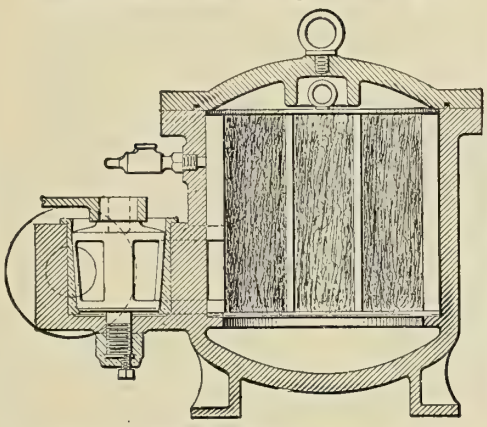

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ENLARGED ITS OFFICES.—The Newhall Chain, Forge, and Iron Company has greatly enlarged its office quarters and is now occupying the entire twelfth floor of the Franklin Building, 13 and 15 Murray street, New York, N. Y. In addition to being commodious, these offices have been rearranged and are among the handsomest in the city. This company manufactures high-grade hand-made crane, dredge, steam shovel, quarry and hoisting chains, manufactured under the trade mark of "Warwick and Trident."

WILL HAVE NEW YORK OFFICES.—The Falls Hollow Staybolt Company, Cuyahoga Falls, O., has opened an office at 132 Nassau street, New York, N. Y., for the sale of its hollow and solid staybolt iron, which is well known to the railroad and marine trades. The office is in charge of Fred P. Bennett. The arguments which the manufacturers present in favor of the hollow staybolt iron is that this iron being rolled round a mandrel leaves a hole through the center of the staybolt, making the strength uniform and the bolt flexible, no one point being weaker than another, which is claimed to be the case with the solid bolt drilled through from 1 inch to 1 1-4 inches, which makes a breaking point. The drilled hole stops at the vertical point and causes the bolt to break much quicker than it otherwise would were it hand drilled. The object in drilling is to prevent breakage, but mechanical opinion inclines to the belief that the drilling process causes the bolt to break.

ELECTRICITY IN MINING—The Westinghouse Electric and Manufacturing Company, Pittsburg, Pa., has a most complete line of electric mining machinery which, from reports, is proving most satisfactory. The use of electricity in mining has resulted not only in better conditions and increased output, but also in a considerable reduction in the cost per ton mined. The expenses of mine operation only increase in proportion with the depth, but since the application of electricity to mining it is an established fact that many mines now working at a great depth are operating at a cost per ton that is considerably less than that expended on higher levels where electric power was not used, the economy showing in both the extraction and treating of the ores. Electric haulage has enabled one coal mining company to double the output of its mine and to reduce the cost of traction; the total yearly saving in this one item being 30 per cent. upon the sum invested in an electric-power plant. The same company also uses the electric current for lighting up the coal cutters and other mining machinery. There are still further companies which do not compare by mere comparison of electric haulage with steam, compressed-air, and mule traction, electric pumps with steam or compressed-air pumps, electric hoists with steam or compressed-air hoists, etc., but which result from the above-mentioned general flexibility and applicability of electric system, making possible the centralization of the power-generating plant, the laying out of a line in a manner most conducive to economical work.

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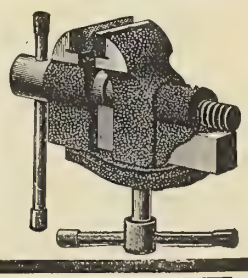

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Roller Bearings for All Purposes.—The Standard Roller-Bearing Company, Philadelphia, Pa., reports an increased demand for its roller bearings, which are made for shaftings, all classes of machine construction, and also thrust bearings for propellers, turbines, vertical shafts, etc.; also, wagon, carriage, and automobile roller-bearing axles. On receipt of drawings, showing plan of the bearings now being used and specifying weight on same and revolutions per minute, this company will furnish drawings showing properly-designed pole or roller journal or thrust bearing to take the place of plain bearing. It is also prepared to supply any size bearing that may be required for any load specified.

For Competent Men.—Hapgoods, Mutual Reserve Building, 309 Broadway, New York, N. Y., furnishes corporations, managers, secretaries, and treasurers, banks and business houses, with cashiers, tellers, bookkeepers, clerks, accountants, and foreign correspondents; firms with buyers; also competent civil, electrical, mechanical, and mining engineers, architects, draftsmen, chemists, and other technical men. This company claims it can be instrumental in securing a position for men of experience who are now either not holding a position or are in uncongenial situations where there is little opportunity to rise. They are capable of filling better positions, but they cannot market their abilities. To them this company offers its service, with the assurance that it can achieve far quicker and better results than could possibly be attained by the individual alone.

New Office Building.—The business of the American Blower Company has increased so rapidly during the last two years that the old offices became entirely inadequate to accommodate the increased office force. The new building is devoted entirely to the company's offices and is located on Russell street, Detroit, Mich., and represents the highest development in modern office construction. The architectural design, by Malcomson and Higginbotham, architects, Detroit, follows closely approved classic proportions. The building is equipped with every modern convenience, including electric lights, annunciator bells, dumbwaiter, an outside telephone system and an independent inside or house system interconnecting all offices and different departments in the shop. A switchboard for each of these systems is located in the lobby. The main interest in the equipment is in the mechanical system of heating and ventilating. As the manufacture of heating and ventilating apparatus forms a large part of the American Blower Company's business, this part of the office equipment naturally received due attention. This system represents the very latest and best practice in heating and ventilating. It has every possible advantage, with none of the many disadvantages of direct steam or hot-water radiation, by producing an even, pleasant temperature and perfect ventilation without drafts. The fan is operated by a direct-connected vertical engine, specially designed by the builders for this class of work. Another unique feature of this plant is the exhaust fan, which is direct coupled to the same engine which runs the heating fan, and which draws the impure or vitiated air out of the building. Thus while one fan is discharging pure, warm air into the building, the other fan on the same shaft is drawing out the impure air. This is the main feature of mechanical ventilation which has brought it into such general favor during the last few years for use in public buildings. Only one thing remains to be mentioned and that is the economy of this system. As the heating coils utilize the exhaust steam from the factory engine, which is brought into the basement through an underground conduit, and as the fan-engine exhaust is also turned into the heater coil, the cost of operating the system is practically nothing, as only steam that would otherwise be wasted is used and without back pressure. No other system offers the same economy, even temperature, and pure air that this system does. Taken as a whole, this building with its equipment is by many said to be the most complete of any building of a like character to be found in this country.

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Racine Hardware Company Reorganized.—The increasing demand for high-grade automatic engines, especially in larger sizes than have been heretofore manufactured by the Racine Hardware Company, Racine, Wis., has made advisable the reorganization of the company. The assets and the good will of the Racine Hardware Company have been transferred to the Racine Engine and Iron Works, which will in the future devote its entire energy, capital, and increased modern facilities to the exclusive manufacture of strictly high-grade automatic engines.

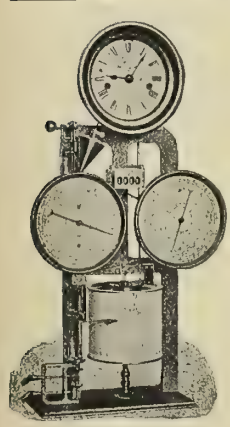
Root's Spiral-riveted Pipe.—Abendroth and Root Manufacturing Company, Newburg, N. Y., is making large shipments of its spiral-riveted pipe, which is made in diameters of 3 to 30 inches and lengths up to 25 feet. Its double-galvanized, flanged pressure pipe is especially adapted for exhaust steam lines and heating systems, paper and pulp mills, pump suction and discharge, air pressures, refrigerating machines, etc. This pipe is made of galvanized straps, then flanged, finally regalvanized, after which it is subjected to a hydrostatic test. The lap in the spiral stem is about 7-8 inch, and when the pipe is put in the bath to be regalvanized after formation the spelter inside the lap melts and after hardening furnishes a spiral stem 7-8 inch wide. The asphalted pipe is particularly suited for irrigating purposes, dredging, hydraulic mining, water and supply and all similar uses above or on the ground. In the process of asphalting the pipe is immersed in a tank containing a special mixture of high-grade asphaltum, heated to a temperature of 300 degrees Fah., and receives a thorough coating both inside and outside. The scientific application of prime western spelter or thoroughly compounded asphaltum is a protection, and no corrosive coating which insures longer life and better service would be possible, with pipe of much greater weight which is not so carefully protected.

Has Increased Its Facilities.—Blackburn Smith Company, engineers and contractors, 29 Broadway, New York, N. Y., has leased a factory and machine shop at Perth Amboy, N. J. The rearrangement of the shops has been completed. A first-class pattern shop with entirely new equipment has been added, and this company is now prepared to receive contracts for repair work, either marine or stationary. W. Blackburn Smith has entire management of the factory.

Working Night and Day.—Both the iron foundry and the new steel plant of the Diamond Drill and Machine Company, Birdsboro, Pa., continue to run night and day, and it is shipping castings in from one to four weeks. In spite of its present excellent facilities for turning out work and its modern method of equipment, it has been found necessary to build another open-hearth furnace to accommodate the large and increasing volume of business.

A Popular Stoker.—The Duluth Stoker Company, Duluth, Minn., has just secured a contract from the American Steel and Wire Company for 8 Duluth stokers, 320 horse power each, and the same company has an option on 14 more of the same size, which it will undoubtedly close. It is the intention of this company to manufacture these stokers in Chicago. At present it has stoker installations going on at Detroit, South Chicago, Cleveland, and West Superior, Wis.

American School of Correspondence.—At a series of receptions recently tendered by the management of Armour Institute of Technology to the students of the American School of Correspondence, Dr. Gunsaulus, president of Armour Institute, presided. Mr. William E. Curtis, of the Chicago *Record-Herald*, was one of the speakers. Mr. Curtis was very much impressed with the earnestness of the 3,000 students who attended, by the character of the instruction given, and by the possibility of this so-often-scoffed-at plan of education for wage earners. All the officers and instructors of the school are college men, graduates from such institutions as the Massachusetts Institute of Technology, Harvard, Tufts College, Lehigh University, Dartmouth, and Armour Institute of Technology. They are men fitted by experience and education to offer sound instruction. That correspondence instruction is filling a real need is no longer questioned by thoughtful people. It not only brings an education within the reach of thousands of people who otherwise could never have one, but it increases the influence of the resident technical schools and colleges by stimulating a widespread interest in education and by acting as a "feeder" in preparing young men for the higher institutions of learning. President Eliot, of Harvard, while recently visiting the school, expressed himself amazed at the scope, thoroughness, and standard of instruction; and the fact that Columbia University and the United States government in the army post schools use their instruction papers as textbooks is but another evidence of the phenomenal advance in the standard of correspondence instruction.



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Hot-blast Dry-kiln Equipment.—The fact that the older and less efficient methods of drying lumber are rapidly being superseded by the fan and heater system renders the plant of the H. C. Dexter Chair Company, Black River, N. Y., of considerable interest, as most of the lumber used for joiner work on shipboard is kiln dried.

In the hot-blast system air from out of doors passes into the fan house, thence through the heater, wherein it is heated to any desired temperature, and finally by means of a fan it is positively forced into the kiln, where it comes in contact with the lumber and, because of its high temperature and dryness, rapidly absorbs the moisture. With the hot-blast system far less steam pipe is required than by any system of direct heating, and it is all massed in a fireproof casing in connection with the fan. In the progressive kiln arrangement the lumber is laid upon cars which are run into the kiln upon two tracks. Two or more cars are added each day, all being slowly passed through against a constant current of warm air. In this way the lumber is subjected to an even draft of hot air, constantly increasing in temperature and dryness as the cars gradually advance toward the hot end of the kiln. The difference in temperature between the two ends of the kiln varies in practice from 50 to 100 degrees Fahrenheit. The kiln is provided with curtains at the top, bottom, and sides, arranged to fit closely the lumber on the cars, so that the hot air will be forced through the lumber. The apparatus installed consists of a steel-plate exhauster, direct-driven by a steam engine and drawing air through a steam-pipe heater, also 200 feet of 12-pound rail, and 24 roller-bearing steel truck frames. An air condenser is interposed in the return duct through which the air is passed on its way from the kiln to the fan. This removes a large part of the moisture from the air and at the same time allows much of the heat to be recovered, thus effecting a saving of steam. This kiln has been built from designs executed by the B. F. Sturtevant Company, Boston, Mass., which has also furnished the apparatus.

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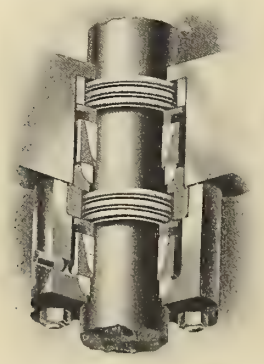

The United States Metallic Packing Company

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509 Great Northern Building, Chicago, Ill.

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The Annual Dinner.—The American Steam Gage and Valve Manufacturing Company, Jamaica Plain, Boston, Mass., gave its annual dinner, tendered the sales department. To have its traveling salesmen and branch-house managers, together with the men of the home office, go thoroughly over the business, ending in a dinner, has become an annual feature.

Allen Riveting Machines.—John F. Allen, 372 Girard avenue, New York, N. Y., reports the following shipments of the Allen Riveters: American Car and Foundry Company, Berwick, Pa.; H. W. Peabody and Company; Manitowoc Steam Boiler Works, Manitowoc, Wis.; Cleveland Crane and Car Company, Wickliffe, O.; Virginia Bridge and Iron Company, Roanoke, Va.; American Paving and Contracting Company, Philadelphia, Pa.; Lauer and Harper Company, Baltimore, Md.; Fletcher and Crowell, Portland, Me.; Tennessee Coal, Iron, and Railroad Company, Birmingham, Ala.; Westinghouse Electric and Manufacturing Company, Pittsburg, Pa.; Canadian Shipbuilding Company, Toronto.

Graphite as a Lubricant.—The graphite manufactured by the Lubriphite Company, Jersey City, N. J., is proving most satisfactory. Of the many dry or solid substances used as lubricants at different times, by far the most remarkable is graphite. The value of this as a lubricant is so generally conceded that it seems strange that its use is not more extensive. This mineral has attracted much attention of late, and a general knowledge of its merits and peculiar properties has been widely diffused. Graphite has a very low coefficient of friction. It is composed of but one element, carbon, hence it is not affected by the action of acids, gases, alkalies, or considerable change of temperature. It oxidizes slowly at a temperature above red heat. When subjected to the action of any of the conditions mentioned it retains constantly its peculiar property of low coefficient of friction. It is a soft solid and has the peculiar property of adhering readily to metallic surfaces when subjected to light pressure. This property causes it to fill the pores and to even up the roughness of metallic surfaces in rubbing contact. The surfaces so coated are thus covered with a veneer of allotropic carbon of graphite, which not only reduces the coefficient of friction of the rubbing surface, and practically that of graphite itself, but by reason of its inert properties protects the surface treated from the action of vapors or other conditions to which it may be exposed. This applies particularly to cylinders; hence the special value of the use of graphite in cylinder lubrication where high-pressure steam, oil, or gas is used.

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A GOOD CHRONOMETER.—T. S. and J. D. Negus, 140 Water street, New York, N. Y., calls attention of shipmasters, shipowners, and others interested, that at the six months' comparative trials of chronometers at the U. S. Naval Observatory, Washington, D. C., in 1886, chronometers of their make passed first, second, fourth, fifth, seventh, ninth, tenth, and eleventh in a list of 45 chronometers submitted for trial by all the makers of chronometers in the United States.

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"THE IRON AGE DIRECTORY, 1903," is the title of the fourth annual edition of this book. It contains 300 pages, devoted to classified directory of goods manufactured by advertisers in *The Iron Age*. The columns of this paper have furnished means of communication between the manufacturer and buyer which have steadily developed in usefulness as the number and importance of its advertisers and subscribers have grown. The classified directory will be found of great use to buyers throughout the country. The price is 25 cents, but one copy is sent free to each subscriber to *The Iron Age*.

POWER-BOAT ASSOCIATION FORMED.—Representatives from over a dozen yacht clubs met recently in New York to discuss matters of importance, among them being the future of racing and the classification of motor boats. A system of classification and a rating rule was decided upon. Owners of motor boats who have, up to this time, been unable to compete in races on account of lack of a handicapping rule, expressed themselves as being pleased by reason of the prospect of good racing after their boats have been rated and classified according to the new rule. The rule adopted is: Boats shall be rated for classification and time allowances by a rating which shall be determined by taking fifteen times the cube root of the square root of the load-water line, multiplied by the horse power and divided by the area of the middle section. The length of the load-water line and the area of the midship section are determined in the accepted way, and the horse power shall be obtained as follows: Steam to be calculated by the standard formula for indicated horse power; electricity to be calculated by the rate of 950 watts to equal 1 horse power; gasoline explosive engines to be calculated by multiplying the area of one piston in square inches by the number of cylinders, multiplied by the stroke in feet, multiplied by the number of revolutions per minute, divided by a constant of 1,000 for 4-cycle and 600 for 2-cycle engines.

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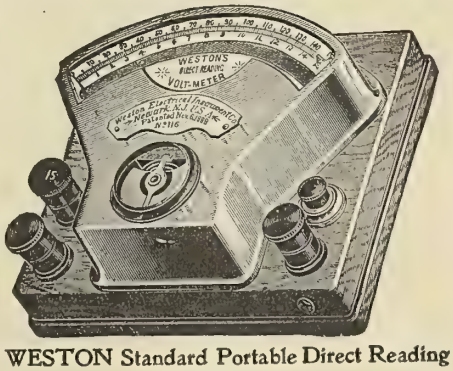

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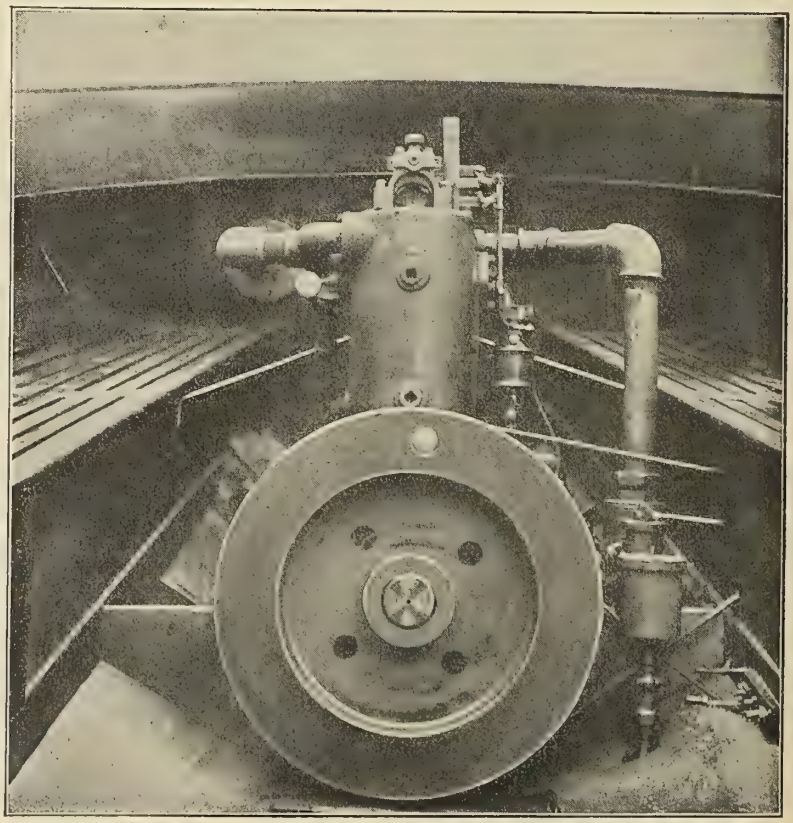

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TRADE PUBLICATIONS.

Joseph Dixon Crucible Company, Jersey City, N. J., is mailing a catalogue, which is got up in a very artistic manner, showing the various pencils manufactured by it.

The American Tool Works Company, Cincinnati, O., is mailing a post card showing very attractive cuts of the specialties it manufactures, which include lathes, planers, shapers, upright drills, radial drills, and boring mills. The company claims that business existence depends largely upon the cost of production.

M. T. Davidson, 141 Broadway, New York, is mailing a catalogue describing steam pumps, pumping engines, power pumps, condensers, evaporating and distilling apparatus, ash ejectors, etc. This catalogue gives a detailed description of the construction and operation of the various specialties made by Mr. Davidson, and should prove a useful book of reference.

The Fuller Company, engineers, Detroit, Mich., is mailing a catalogue showing illustrations of this company's apparatus, which includes engine generators, yacht-lighting plants, belted dynamo or motor, enclosed automatic engine, electric ventilating fans, belt-driven fans, etc. The cuts here shown are well printed on heavy paper and give a fine idea of the specialties enumerated.

"Pumping by Compressed Air" is the title of a catalogue issued by the Pneumatic Engineering Company, 128 Broadway, New York, in which a system of pumping by compressed air is thoroughly explained. This catalogue goes into detail, and is recommended to those interested in this subject. It also gives several illustrations of the system as installed in many towns throughout the United States.

The Rand Drill Company, 128 Broadway, New York, is mailing a post card showing a photograph of its exhibit at the conventions of Railroad M. M. and M. C. B. Associations and A. S. M. E. at Saratoga Springs. The photograph shows Imperial type steam-actuated compressor, Imperial hammers, Imperial piston air drills, wood-boring machines, motor-driven compressor, and Imperial type of compressor driven by gasoline engine.

The Crandall Packing Company, Palmyra, N. Y., is mailing a catalogue showing many cuts of the high-grade packing it manufactures. The catalogue also contains a calendar in which one may keep memoranda from day to day. It is the intention of this company to place this in your hands the first of each month. Should you change your address, wish to place an order with the company, or care to see one of the salesmen, you can tear off the back cover, which is a private mailing card, and forward it.

Toch Brothers, 468-472 West Broadway, New York, are mailing a leaflet describing the R. I. W. damp-resisting paints, which they claim have been used with great success in past years by boatbuilders, ferryboat companies, and at many dry-docks. The company numbers the different kinds of paints according to the uses for which they are made. Thus R. I. W. No. 112 is suitable for the inside of hulls, No. 49 for outside of hulls and iron work generally, and marine cement for calking and paying seams. also covering the floors of the boats before the sheathing is laid.

Pratt and Whitney Company, 136 Liberty street, New York, N. Y., has just issued one of its standard 6 by 9 booklets on its bench lathe, 10-inch toolmaker's lathe, 13-inch engine lathe, and 14-inch jibbed carriage engine lathe. The book contains 67 pages and is fully illustrated with excellent half-tone plates. The first 37 pages of the book are confined to a description of the 7 by 32-inch bench lathe. This machine is described in detail, and illustrations are given of more than thirty of the various attachments which may be furnished with the lathe, giving an adequate idea of the great diversity of work to which this machine is adapted. The 10-inch toolmaker's lathe is carefully described, and illustrations are also given showing the application of the collets and split chucks to the spindle.

When writing to advertisers please refer to MARINE ENGINEERING.

"A Short Story of the Life of Elias Howe" is the subject of a monthly catalogue which is sent on request by Wyman and Gordon, Worcester, Mass. Only incidental reference is made to the facilities of this firm for manufacturing forgings of all kinds.

The General Specialty Company, 101 to 107 Seneca street, Buffalo, N. Y., is mailing a catalogue describing its torpedo, which it claims can be fitted in the tubes of boilers, and in a very short time will jar off from the outside of the tube any lime or other scale which proves damaging to the tubes. This catalogue contains several illustrations of the torpedo in action and its method of removing scale.

The Peerless Rubber Company, 16 Warren street, New York, N. Y., has issued a catalogue describing the specialties manufactured by it. This catalogue is devoted primarily to a complete list of packing, which is shown in great variety, accompanied by a great deal of information regarding it, together with numberless illustrations of disks, gage-glass rings, rubber belting, pump valves, tubing, hose, perforated matting, etc.

Galvanum is thoroughly described in a catalogue issued by the Goheen Manufacturing Company, Canton, O. With the introduction of iron and steel into the art of manufacture, this company claims, a new problem was presented to the paintmaker. It has been found, after years of demonstration, that ordinary paints, such as are used on wood, tin, steel, and other surfaces, will not adhere to galvanized iron for any length of time. By systematic experimenting the problem has been solved with the use of Galvanum.

Steel-plate Fans is the topic discussed in Catalogue No. 134 issued by the American Blower Company, Detroit, Mich. A description is given of the A B C steel-plate fans, which are used for heating, ventilating, and drying plants, forced and induced draft apparatus, etc. The growing popularity of the fan system of heating, the general demand for the proper ventilation of buildings of all kinds, and the increasing knowledge of the advantage of mechanical draft will make this book especially valuable to those who wish a thorough understanding of the subject.

"Shop and Tool Equipment" is the title of Catalogue No. 26 issued by the Northern Electrical Manufacturing Company, Madison, Wis. The company has endeavored in this catalogue to present a few arguments in favor of electrical operation of machinery. It claims that the statements regarding the increased conveniences and economies due to electrical operation of machinery are based upon facts and experience, and can be easily verified. They are being corroborated daily in scores of machine shops, mines, mills, and manufacturing establishments where electric motors are considered an indispensable integral of economic production. The illustrations show a wide range of application, and are perhaps the best argument this company can offer.

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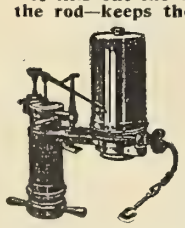

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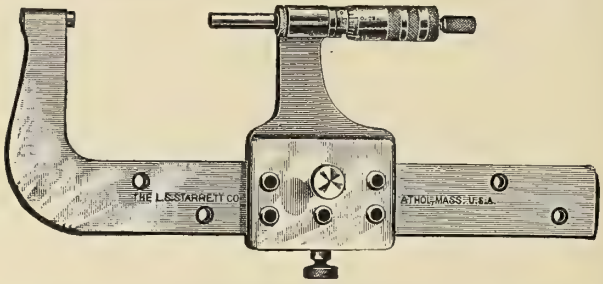

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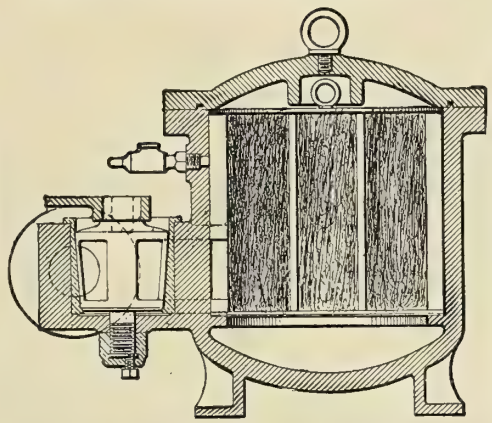

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BUSINESS NOTES.

A SATISFACTORY CLEANER.—The Specialty Company, Rose Building, Cleveland, O., is meeting with marked success in manufacturing Wonderine, a cleaner for woodwork, decks, etc., on steamships. It polishes and preserves wood, and is especially adapted to varnished and waxed surfaces. This company will send a sample quart can of this preparation to any one mentioning MARINE ENGINEERING.

SIXTH VICTORY IN PATENT LITIGATION.—This is the sixth victory won by the Philadelphia Pneumatic Tool Company, Philadelphia, Pa., in patent litigation during the last three and one-half years, all this serving to show how utterly without foundation are the claims of pneumatic tool companies to having basic patents on all kinds of pneumatic tools. On the other hand, it also proves that this company never misled its patrons in its assertion that its own patents are valid and do not infringe other patents.

THE FOUR-TRACK NEWS.—This is the title of a series of 35 books of travel and education issued by the Passenger Department of the New York Central and Hudson River Railroad. These small books are filled with information regarding the best modes of travel and the education that may best be obtained by it. They refer specifically to the great resorts of America; trips to the islands of the sea and around the world, giving much useful information regarding the time required for the journey, its cost, and other particulars not easily obtained elsewhere. They also contain numerous illustrations and new and accurate maps of the countries described. A copy of the 52-page illustrated catalogue, giving a synopsis of the 35 books presenting the Four-Track series, as well as a small half-tone reproduction of each of eight beautiful etchings of scenery along the line of route, is sent on receipt of a 2-cent stamp by George H. Daniels, general passenger agent, Grand Central Station, New York, N. Y.

A SATISFACTORY MOTOR.—The Rochester motor, made by the Rochester Electric Motor Company, Rochester, N. Y., is meeting with well-deserved praise. Although finish and reliability were of first consideration in the design of these motors, they are of pleasing outline, compact, and may be readily modified to meet special requirements. The frame is a single casting, and the end plate or bearing supports are bolted directly to it. These plates protect the armature and field windings from mechanical injury and may be swung around so that the machine may be placed either on the floor, wall, or ceiling. A machine originally assembled for one of these positions may be rearranged for placing it in either of the other two. The poles of the multipolar machines are of laminated soft steel, and, being bolted to inside or cast into the frame, may be accurately spaced. This therefore permits the removal of the poles and field coils without removing the armature. The pole tubes are supposed to produce a uniformly distributed field, and the motors will operate when sparking even under widely bearing loads.

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Extra Heavy Valves, Bent Pipe and Fittings for High Pressure Work

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Which does not Weep under heavy pressure

OUR BOOK CONTAINING "TABLES OF DIMENSIONS" OF WALWORTH GATE VALVES, FLANGED FITTINGS, FLANGED OVER PIPE JOINTS, WROUGHT IRON BENDS, ETC., should be in your draughting room.

A Busy Shipyard.—The work at the Krajewski-Pesant Company's shipyard, Havana, Cuba, is double the amount of last year. Besides a large number of American and foreign steamers, it has repaired the cruiser *Falke,* of the German Navy, doing important work to the entire satisfaction of her commanding officer. The shops of this company are now equipped with modern tools, enabling it to carry out work to a speedy completion and at a moderate rate. Its floating dry-dock and yard are larger than any on the Gulf of Mexico or Central American coast, and as it becomes better known in the marine world this yard is constantly favored with new customers.

Department of Marine Engineering.—In response to frequent calls for technical instruction in marine engineering, the Chicago Nautical School, Masonic Temple, Chicago, Ill., has introduced a course, with regular lectures and study class, besides special hours in drafting and designing, for those who wish to equip themselves for building, installing, or inspecting marine machinery. The work is in the hands of first-class instructors, selected for their practical as well as theoretical information. Every effort will be made to impart a thorough and serviceable knowledge of the subject. Careful attention will be given to each student according to his needs, so that no one need hesitate to take the course from the lack of preliminary schooling. There are three distinct terms in the full course, each one arranged to cover all the subject matter, but with increasing degree of completeness and widening scope. Thus, for example, in the chapter on boilers the heading "Type of Boilers" in the first term will explain the different kinds of boilers and their nomenclature, so that they will be readily recognized and the peculiarities of their construction understood. The second term will detail more thoroughly the particular advantages and disadvantages of each, and show where and why each type is particularly adapted, while in the third term data for calculations of efficiency and performance will be given for comparing one boiler with another or estimating usefulness in some particular case. Lectures and class hours are so arranged that either two terms, as first and second, or second and third, may be taken up simultaneously by men whose experience or previous study fits them to do so.

Three Hundred Thousand Injectors Sold.—On July 15 the Penberthy Injector Company, of Detroit, Mich., placed the number 300,000 on one of their Penberthy automatic injectors, having completed this number of injectors in just a little over sixteen years. They rightly consider that this is a most remarkable record, especially when it is taken into account that it required nearly ten years of hard work to convince engineers that an automatic injector was a practical device, and to manufacture and sell the first 100,000 machines. It is somewhat difficult to comprehend what is meant by 300,000 injectors. Possibly the following facts may help to an understanding of the subject. Basing the figures on the average capacity of the injectors sold during the past twelve months, the 300,000 Penberthy automatic injectors on the market will handle in one hour 109,500,000 gallons of water. This amount of water, if pumped into an upright tank 50 feet square, would require the tank to be over a mile high; or, to put it another way: if the output of these 300,000 injectors were combined in one stream, it would supply a river 10 feet deep and 250 feet wide, and keep up a steady flow of water at the rate of a little over one mile per hour. If the 300,000 injectors were all connected with one source of water supply they would in ten hours completely drain a lake 10 feet deep, one mile long, and half a mile wide. The Penberthy injector is acknowledged as the standard among automatic machines everywhere, and has never been surpassed in its working qualities by any injector retaining the automatic feature until the same company placed on the market a few years ago their Auto-Positive, hot-water, high-pressure, restarting injector, information regarding which they will be glad to furnish any inquirer.

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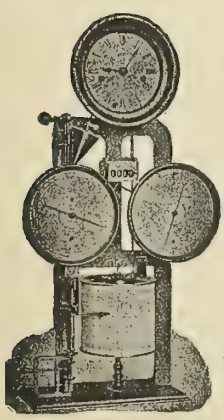
EDUCATION BY MAIL.—The Correspondence Institution of America is an educational institution chartered by the Commonwealth of Pennsylvania, conducting and teaching by mail electrical engineering, practical electricity, interior wiring and bell work, telephone and telegraph engineering, and street-railway engineering, from the central office at Scranton, Pa. The proprietors, The Clark Co., are composed of some of Scranton's well-known business men, who have spared neither effort nor expense to give students of the institution the best course available, and the subsequent results can be assured. The institution occupies an entire building, devoted exclusively to mail instruction, containing the instruction and mailing departments and the printing plant. Years of practical experience in teaching thousands of people have enabled the instructors of the various courses to furnish students with a carefully prepared and thorough system of home instruction, equally well adapted to exclusive or spare-time study.

IMPROVEMENTS IN MANCHESTER CANAL.—Herbert M. Gibson, superintendent of traffic of the Manchester (England) canal, is visiting Boston with a view to increasing the interest in the relations between this port and the English cotton center. He will in turn inspect the ports of New York, Philadelphia, and Baltimore. Regarding the Manchester situation, he states that the improvements now being made and contemplated have rendered that city, though it is nearly 40 miles inland, the most admirable and best-equipped port in Europe. The transatlantic traffic in 1902 amounted to about 3,000,000 tons. At this rate the increase for 1903 will approach 4,000,000. Boston, through the recently established Leyland-Manchester service of the International Mercantile Marine Company, contributes materially toward this increase; and with the revival of the export trade that is bound to come, Mr. Gibson believes that, since the cattle embargo is off, Boston is bound to become a still greater factor in Manchester commerce.

SCHOOL OF WIRELESS TELEGRAPHY.—The Thos. E. Clark Wireless Telegraph-Telephone Company, Detroit and Pontiac, Mich., has instituted a wireless telegraph school for the benefit of those who desire to become familiar with the Clark apparatus.

POPULAR BOATBUILDERS.—The Matthews Boat Company, Bascom, O., for the past ten years has built power-boat hulls for the largest gasoline-engine builders in the United States, and has during this time perfected the Matthews torpedo launch, which has been successfully used and sold in every country, although not always under this name. This company is now prepared to sell direct to customers the same high-grade product that it has furnished in the past and install engines of any power desired. The stock launches will be fitted with the Lozier motor, as hitherto. In the near future this company will have its new complete catalogue to offer to the public. It is very artistic in its design and contains information of marine laws and tables of interest to all launchmen. It will be pleased to place your name on file for a copy and give any information concerning its models. In the meantime the company will be glad to furnish full-sized blue prints, general specifications, and complete description of any design in which you may be interested.

SPEEDY AND POWERFUL ENGINES.—That the Knox Gasoline Engine, manufactured by the Camden Anchor-Rockland Machine Company, Rockland, Me., has forged to the front is becoming more evident every day, as engines are being shipped to all parts of the country. The users of this engine are strong in their praise, and unsolicited testimonials are being received daily by the company. There is a reason for this; the Knox engine is the culmination of brain and energy and a desire on the part of the promoters to manufacture a speedy engine, coupled with reliability. A purchaser of one of these engines, in writing recently to this company, stated that he had placed one of these engines in an 18-foot dory, which was used as a tender as well as for towing purposes. The dory some time since had occasion to tow a smack 33 miles, which was accomplished without a single mishap, the engine starting at 4 P.M. and running steadily until 3 o'clock the following morning, covering the 33 miles in 11 hours. During that time the only attention the engine received was the refilling of the oil cups. It would be difficult to estimate the amount of money saved in this case, as the smack carried a consignment of lobsters; and as the calm lasted several days, in all probability the cargo would have been destroyed had it not been that the dory was fitted with a first-class engine. This experience proves conclusively that these engines are made to withstand the strain of high pressure in cases where it is necessary that they run for a long and uninterrupted period. In external appearance the Knox engines are very attractive, but their design and construction afford results which are equally gratifying to the makers as well as to the purchasers.



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The Derry-Collard Company, 256 Broadway, New York, N. Y., is distributing a catalogue thoroughly describing technical books as well as its system of selling. You communicate with the company, giving the name of the book you want, and it will be sent to you promptly. After you have examined it, you may return the book or remit to the company the price of same. If you are uncertain as to what book you want, inform the company what subject you wish to cover, and set the price limit, and it will pick the best book for the price and send it to you on approval. If you send cash with your order it will be treated "as on deposit." It is your money until you get the right book. The publishers carry an exhaustive stock of modern technical books, and are also in a position to furnish any map of any place on earth that has ever been mapped.

Liquid Marine Glue.—The Wachter Manufacturing Company, Baltimore, Md., is putting on the market something in the line of glue specially intended for use in marine work and which is meeting with great success. It is called the Army and Navy Liquid Glue. The circulars claim for this glue that it is the best and strongest that money, experience, and brains have produced. It is not fish glue, but pure animal glue, and is claimed to be the only animal glue in liquid form ever on the market. The circulars further state that the glue will not sour, mold, get brittle, brash, or crumble; that it will stand more heat and cold than other glues; that it is smooth as oil and is as easily applied as any glue could be. Being in liquid form, it is always ready for use, and it does a maximum amount of work, for it is always of the same consistency. Because of its adhesive qualities, it is believed to do the very best work, and, at the same time, saves waste, time, trouble, annoyance, and insurance. This glue is sold in cans, kegs, barrels, tubs, and bottles. The cans are in many sizes and do not have screw tops but friction tops, so that they are easy to open and close. Special inducements are held out for those in the marine field who wish to make a trial of this glue.

A Reliable Riveter.—John F. Allen, 370 Gerard avenue, New York city, informs the public in general and his customers in particular that some of his competitors, after two years of steady effort, by means of extensive advertising and strong influence, have finally admitted that their riveting machines were not a success and have withdrawn them from the market. To take its place they are now introducing another style of riveter, which embodies almost the identical attachments of his old-style riveter prior to patented improvements made during the past year, embodying a double-lever toggle arrangement and cut-off valve connection, effecting a great saving of air. Mr. Allen warns all users of riveting machines not to confuse these machines with the genuine Allen riveter or be persuaded that they are equally as good. He knows from actual comparison that his machines are not as heavy, but have greater capacity than the inferior make of riveters. He feels complimented by the recognition of merit shown by his competitors in copying his riveter and trusts that the public will place the same interpretation on it. There are now in use about 2,000 Allen riveters, which are being shipped at the rate of 350 a year.

Alternating-Current Switchboard Panels.—The Fort Wayne Electric Works, Fort Wayne, Ind., have placed on the market a standard alternating-current switchboard panel for single-phase circuits. In modern switchboard construction the tendency toward standardization has become so well recognized by the larger and more progressive manufacturers that it is now possible to obtain complete equipments for central-station and isolated-plant switchboards composed of standard panels or units. In many cases a switchboard may be constructed entirely of direct-alternating-current generator, feeder, lightening motor, and transformer panels of standard design without any special construction. The advantages of constructing a switchboard of standard panels are chiefly in the reduced first cost, in changeability of panels, and the ease with which additional units may be installed without affecting the symmetry or arrangement of existing switchboard equipment. It also requires less time to build a standard panel than one calling for special construction because of extra engineering work and possible delay in obtaining special equipment. Most of the manufacturers carry standard panels in stock or can furnish them at short notice, and generally at a lower cost than is possible when specifications are received which will require special construction or difference in minor details that are not really essential to the proper operation of the plant.

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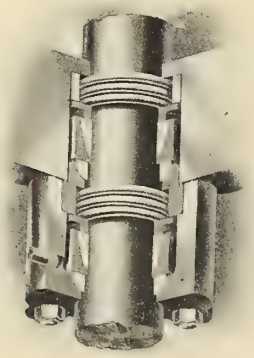

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With Key naming and describing every part of the Engine, all in a neat pocket, Price One Dollar

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The cards will be white and of the regulation size, three by five inches.

The service will begin with the cards which have appeared on pages 356, 360, 365, 400, 407, and 422.

As it is impossible to tell in advance how many cards will be issued each month, we shall make the uniform charge of

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Payment may be made each month as orders are sent in, and in postage stamps.

Sample cards sent at any time upon request of those who wish to investigate the service.

Marine Engineering

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CHANGE OF ADDRESS.—In future the business of the Mohawk Paint and Chemical Company will be conducted at the factory office, Norwich, Conn., where all communications should be sent instead of to 19 Liberty street, New York, N. Y.

RECEIVER'S SALE AT TRIGG SHIPYARD.—Under date of August 11, Mr. Lilburn T. Myers, receiver of the court for the William R. Trigg Company, Richmond, Va., advertises that at a public auction in the shipyard of the company, Richmond, Va., on September 22, 1903, beginning at 10 A.M., there will be sold the oil-tank steamer now under construction for the Standard Oil Company of New York and two tugboats for the Pennsylvania Railroad Company. The contract price for the former was $439,500, of which the sum of $219,750 had been paid prior to the appointment of a receiver. The two tugboats were contracted for $97,750, of which amount $60,000 had been paid. The vessels will be offered for sale in the following three different ways: 1st, the hull, machinery, and materials of each vessel separately; 2d, the hull and machinery in one parcel and the materials as a separate and distinctive parcel; and 3d and lastly, the hull, machinery, and materials for each vessel as a whole in one parcel. The successful bidder will have the right to use the shipyard of the said company as far as may be necessary to complete the vessels for removal or completion, at a monthly compensation equivalent to 30 per cent. upon the productive labor expended in the work, in consideration of which the purchasers are to have the use of all facilities of the plant, including light, power, tools, and the patterns and drawings. The oil-tank steamer is 350 feet long between perpendiculars, 50 feet molded beam, 21 1-2 feet to main deck, 28 1-2 feet to spar deck, and with a draft of 22 feet 5 inches, fully loaded with cargo and fuel, has a carrying capacity of 1,500,000 gallons. The hull on the stocks at the present time is practically in frame, with most of the bulkheads in place and riveted. The engine is a triple-expansion of 25, 41, and 68 inches by 42 inches stroke, fitted with Lang radial valve gear and designed for 100 revolutions and 60 pounds pressure; it is almost completed. Each of the two tugboats is 92 feet 6 inches long between perpendiculars, 105 feet long over all, 22 feet molded beam, 12 feet 2 inches depth amidship. The hull of each tug is practically completed and riveted. The engines have cylinders 18 and 36 by 26 inches stroke. Most of the material for the engines has been worked. The boilers for the oil-tank steamer and tugs are not for sale, as they were built by sub-contractors, those for the oil-tank steamer being at the Cramp shipyard and those for the tugboats at the Newport News yard.

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THE PROFESSOR ON SHIPBOARD, - - - PRICE, $1.00

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Voltmeters, Ammeters,

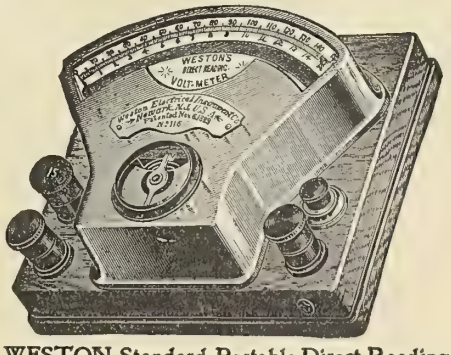
MILLIVOLTMETERS, VOLTAMMETERS, MILAMMETERS, OHMMETERS, PORTABLE GALVANOMETERS, GROUND DETECTORS, AND CIRCUIT TESTERS.

Our Portable Instruments are recognized as **the standard** the world over. Our **Voltmeters** and **Ammeters** are unsurpassed in point of extreme accuracy and lowest consumption of energy.

WESTON ELECTRICAL INSTRUMENT CO.,

New York Office, 74 Cortlandt St. Waverly Park, NEWARK, N. J., U. S. A.

BERLIN:—European Weston Electrical Instrument Co., Ritterstrasse 88.
LONDON:—Elliott Bros., Century Works, Lewisham.
PARIS, FRANCE:—E. H. Cadiot, 12 Rue St. Georges.



WESTON Standard Portable Direct Reading Voltmeter.

Railway Dry-dock for South America.—H. I. Crandall and Sons Company, East Boston, Mass., has been very successful in securing contracts in many parts of the world for its Marine Railway Dry-dock. This company reports among recent contracts one with the Cartagena Magdalena Railway Company, Colombia, South America, for light-draft steamers up to 170 feet in length.

Ventilating Equipment for the Pennsylvania Steel Company.—The Pennsylvania Steel Company has recently erected at Steelton, Pa., a large shop and an office building for its bridge and construction department. The latter has been designed with especial care and exemplifies the latest methods used in heating machine shops and similar one-story structures. Buildings of this nature offer many difficulties, not only on account of their mere size, but also because of the great height considered as one story and the rapid rate at which heat is transmitted through single walls and skylights. At first thought the most obvious way of heating such structures would appear to be by the distribution of steam or hot water through pipe coils or radiators placed at suitable intervals over the area to be heated. This was, in fact, one of the first methods adopted, but actual experience with it has developed a number of disadvantages, some of which are serious. In the first place, an extended system of piping involves many fixtures and joints to be kept in order; it is a source of danger from fire where unprotected pipes pass near wood or other inflammable material, and is subject to damage by freezing in severe cold weather. Moreover, it does not deliver the heat where it is most needed, for while the neighborhood of the steam coils may be excessively hot, due to direct radiation, other places at a distance are not sufficiently warmed. Most of the heat transmitted directly to the air by conduction and convection is lost, since the hot-air currents rise vertically and impart their heat to the roof and skylights. Ventilation in connection with this method of heating is an uncertain and unsatisfactory affair and is usually not considered. The above objections are obviated in the fan and heater, or "hot-blast" system, which has been adopted in the buildings under consideration. In this system the steam piping is concentrated in a compact heater, which is enclosed by a steel housing. Due to the greater velocity of the air over the pipes of the heater, much less length of pipe is required than if the piping were scattered throughout the shop, and all dangers from freezing and bursting of pipes, setting fire to woodwork, etc., are, of course, eliminated. Air, taken either from the shop or from out-of-doors, is forced through the heater by a fan and is then carried to various points about the shop by a system of galvanized iron piping. The exhaust from the fan engine is condensed in a section of the heater arranged for that purpose, and there is, therefore, no loss of steam due to the engine. The ventilation of shop buildings is of considerable importance, especially during sultry weather, and the fan makes it possible to obtain most satisfactory results. On account, however, of the comparatively small number of occupants in buildings of this class as compared with the total cubic contents, sufficient ventilation will be brought about under the usual weather conditions by the leakage of air through doors and about windows and in other ways, and a considerable economy of steam may be effected by drawing the air directly from the building rather than from out-of-doors. This is always possible when heating up in the morning before the arrival of the workmen and renders that process much more expeditious. In the bridge and construction shops of the Pennsylvania Steel Company there are eight fan-and-heater equipments, consisting each of a steam-coil heater in connection with a steam-engine-driven exhaust wheel. The heaters, with the remainder of the equipment, were furnished by the B. F. Sturtevant Company, Jamaica Plain, Boston, Mass.

THE ONLY MAGNETIC OXIDE MADE

MOHAWK PAINT & CHEMICAL CO.
NORWICH, CONN.

Certificate of Analysis.

This is to Certify, *that I have tested a sample of Black Oxid of Iron Pigment from the Mohawk Paint and Chemical Co., of Norwich, Conn., and have obtained the following results:*

Oxid of Iron (Fe_2O_3 and Fe_3O_4)	94.98%
Silica (SiO_2)	2.80%
Alumina (Al_2O_3)	2.40%
Lime (CaO)	Trace.
Moisture	"

The 94.98% of Oxid of Iron consists of

Sesqui-oxid (red Fe_2O_3)	0.37%
Magnetic oxid (black Fe_3O_4)	94.52%

REMARKS:—This specimen is a black magnetic oxid of iron pigment of high commercial purity.

RUDOLF deROODE, Ph. D.

Glens Falls, N. Y., May 30, 1903.

Dr. Rudolf deRoode is a Doctor of Philosophy ('90) from the Johns Hopkins University; a member of various Chemical Societies of Germany, England and America; was formerly Lecture Assistant and Fellow in Chemistry at the Johns Hopkins University; a Chemist in the U. S. Government service; Chemist of the American Graphophone Co. of Bridgeport, Conn., and Analytical Chemist for Fraser & Co., of New York City. He is at present Chemist of the International Paper Co., of New York City, and is Superintendent of their Bureau of Tests located in Glens Falls, N. Y.

SEND FOR DESCRIPTIVE CIRCULAR.

Pneumatic Tools.—The Cleveland Pneumatic Tool Company, Cleveland, O., reports unusual sales of its pneumatic tools, which are of many kinds, designed for special work, and have been in use in a limited way for many years. The pneumatic tool that is now being offered as an adjunct in the machinery equipment of all up-to-date shops and factories might properly be classed as a modern device. The evolution of these tools during the past four or five years has been characterized by tremendous strides in means of cheapening the cost of production and at the same time giving to the customers a product of the highest grade. Pneumatic tools occupy a field separate and unapproachable by any mechanical device now known. This company will send to you on trial any of its appliances, in order to demonstrate its claims most effectually, the tools to be returned if not as represented.

A Delightful Ocean Voyage.—There are no steamships running out of New York which are more popular than those of the Old Dominion Steamship Company. The short sea trips of this line have long been popular with the traveling public, and the increased patronage has necessitated the company's adding to its fleet during the last few years the five new ships now in its service. One of these steamers sails daily, except Sunday, from both New York and Norfolk, connections being made with the railroad lines south of Norfolk, thus forming a popular connecting link between north and south-bound travel. The company also runs in conjunction with the Norfolk line the new steamers *Berkeley* and *Brandon* for night service on the James river between Norfolk and Richmond, Va. This improvement covers a long-felt want, as it offers to business men and to the traveling public in general the opportunity to spend the day in one of the cities, board the steamer in the early evening, and reach the other city the following morning.

SPECIAL NOTICES.

Announcements under this heading will be inserted at the uniform rate of thirty-three-and-a-third cents a line. Lines average ten words each.

POSITION WANTED.

Gentleman, forty-three years of age, married, graduate U. S. Naval Academy, sober, industrious, very energetic, progressive, original, possessed of tact and ability to bring any undertaking to a successful issue, fifteen years' experience managing wholesale and manufacturing business, having designed, contracted for and superintended the construction of five gunboats for the Government, capable of handling large numbers of men, and having exceptionally excellent references, desires to connect himself with some firm or corporation where his attainments may prove of value.

X Y, care Marine Engineering

FOR REASONS OF STATE.

This charming little love story is contained in a 128-page book just issued by the Lackawanna Railroad. The book is profusely illustrated with more than 175 half-tone engravings, and describes the attractive summer resorts along the Lackawanna Railroad, with complete information about hotels and boarding houses. Sent on receipt of 5 cents in stamps, to cover cost of mailing. Address T. W. Lee, General Passenger Agent, Lackawanna Railroad, New York City.

ANNUAL OUTING OF THE LUNKENHEIMER COMPANY.—The forty-first annual outing tendered to the employees of the Lunkenheimer Company, Cincinnati, O., was held at Woodsdale Island Park. The programme consisted of games, contests, dancing, baseball, etc. Tickets were issued to all employees, entitling them to the use of the attractions of the park. This is an annual event which is looked forward to with much pleasure by those participating.

THE MOST COMPLETE STOCK

BRASS and COPPER

in Sheets, Tubes, Wire and Rod

SERVICE RIGHT, QUALITY RIGHT, PRICES RIGHT

WATERBURY BRASS CO.

122 to 130 Centre St., New York City.

Always have our classified Stock List before you
YOURS FOR THE ASKING

Cabins and Staterooms

of modern vessels especially those in the passenger service should demonstrate the supreme possibilities of the wood finisher's art.

This demands a special varnish, however, as atmospheric conditions are more destructive to varnish afloat than ashore and the ordinary article is of but little use.

The varnish best adapted to withstand the deleterious influences of wind, wave and weather is

Berry Brothers' Spar Varnish.

Further particulars and a unique marine puzzle sent free for the asking. Write us.

Berry Brothers, Limited,
Varnish Manufacturers,

NEW YORK BOSTON PHILADELPHIA BALTIMORE CHICAGO CINCINNATI ST. LOUIS SAN FRANCISCO

Factory and Main Office, DETROIT.

A CONVENIENT HOT-WATER BAG.—The Electrotherm made by the H. W. Johns-Manville Company, 100 William street, New York, is meeting with great popularity. The heating system is composed of wires, insulated and protected by asbestos, woven into a light and flexible sheet or pad, which, when attached to the ordinary incandescent lamp socket, offers sufficient resistance to the current to produce a constant and uniform degree of heat. The size of this Electrotherm for general use is 11 by 15 inches and 1-4 inch thick, which is provided with a regulating switch, connecting plug, and 15 feet of flexible conducting cord, with coverings suited to various purposes.

THE NEW MASON ENGINE.—In view of the very large demand for the Mason engine, made by the Mason Regulator Company, 158 Summer street, Boston, Mass., this company has prepared a new model, which includes all the many excellences of the original engine and several additional features. The model C is, first of all, constructed much heavier in every part, and has larger wearing surfaces. The company has case-hardened all wearing surfaces, which greatly increases the life of wearing surfaces. The Mason Regulator Company was among the first builders of steam engines for automobiles, having placed its auto-engine on the market in 1897. These engines have always been considered a standard type, as is evidenced by the fact that almost one-half of the steam carriages built have been equipped with the Mason engine.

COMBINATION BOOK OFFER

Practical Marine Engineering, - - *$5.00*
The Professor on Shipboard, - - *1.00*
Total, $6.00

PRICE OF THE TWO, - - $5.50

SENT ON RECEIPT OF PRICE BY

MARINE ENGINEERING, - - - 309 Broadway, New York City

The Peerless Spiral Piston and Valve Rod Packing

It will hold 400 lbs. of steam

Once tried always used

Will run twelve months in high speed engines

Arctic Packing

To be used exclusively for packing Ammonia Pumps

This packing is made in several hundred sizes

This packing is specially constructed for ice machine service, of layers of rubber and plies of duck which are so arranged and laid as to best resist the actions of ammonia, cold and heat.

The duck is a specially made duck, frictioned with an entirely new compound heretofore unknown to the rubber trade, and the core and back is of the celebrated Rainbow Packing compound, which is specially adapted to resist ammonia, cold and heat.

This packing is constructed on a strictly scientific basis, and the results obtained thus far have demonstrated fully its value for ammonia packing.

This packing is made in several hundred sizes. The rings may be slipped onto the rod very readily.

The usual rule is to be observed in giving measurements, the depth and width of stuffing box and size of piston rod, in order to get the size desired.

Sole Manufacturers of the

Celebrated Rainbow, Eclipse Sectional Rainbow Gasket, Hercules Combination and Honest John Packings.

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" 94, George R. Jones, Box 222, Washington, N. C.
" 95, P. J. McMahon, P. O. Box 199, Key West, Fla.
" 100, Thos. F. Sullivan, Honolulu. H. I.
" 101, J. K. Cotton, Box 765, Norfolk, Va.
" 102, Fred W. Linsemeyer, 210 Clinton St., So. Haven, Mich.
" 103, A. E. Pittman, P. O. Box 378, Newbern, N. C.

TRADE PUBLICATIONS.

The Warren Webster Company, Camden, N. J., is mailing a folder in which reference is made to the Webster feed-water heaters.

The Royersford Foundry and Machine Company, Royersford, Pa., is mailing a leaflet describing its punches and shears and illustrating the tools desirable for machine shops, wagon builders, etc.

Rapid milling machines have a new catalogue devoted to them which is now being distributed by the Cincinnati Milling Machine Company, Cincinnati, O. This catalogue comprises 30 pages and contains illustrations showing these machines in operation.

Yachtsmen and others interested in boats in which power is used will find much of interest in the catalogue issued by the Western Gas Engine Company, Mishawaka, Ind. These boats are well illustrated and described, and many special features are referred to.

Radiators and regulators are described in a folder now being distributed by Monash-Younker Company, 43 Center street, New York, N. Y. Many types of radiators and regulators are illustrated, and quite a little descriptive matter is given regarding these specialties.

Sent Free.—The Durable Wire Rope Company, 288 Congress street, Boston, Mass., is mailing a very attractive souvenir match scratcher. At the top of this useful office adjunct reference is made to the company's specialties, which include Jupiter transmission rope, durable wire hoisting rope, tiller rope, etc.

The Wachter Manufacturing Company, Baltimore, Md., is mailing a useful and handsome imitation ivory paper cutter and letter opener, advertising its Army and Navy liquid glue. Every business man ought to have one of these cutters on his desk, and we infer that any reader of Marine Engineering who will write to the Wachter Manufacturing Company will receive one.

Electric heating, as applied to cooking, laundry work, plumbing work, etc., manufactured by the Simplex Electric Heating Company, Cambridgeport, Mass., is concisely and splendidly illustrated and described in an exceedingly well-printed catalogue. There are shown many illustrations of the specialties manufactured by this company, together with much information regarding the subject of heating by electricity.

Indicators, Reducing Wheels, and Planimeters.—A. C. Lippincott, Arbright avenue, Scranton, Pa., is mailing a complete catalogue describing these instruments, which, it is claimed, are not only giving the highest satisfaction in stationary work, but have been used for years in some of the most difficult marine-engineering work. This catalogue also describes steam separators, steam pumps, oil extractors, shaking grates, furnace blowers, filters, etc., and is well worth writing for.

Users of gas engines will find a most interesting catalogue on the subject of gas engines in the one issued by the Lozier Motor Company, Plattsburg, N. Y. This catalogue is well bound and printed. One of the features is that the engine is shown in detail and very completely and fully described. The illustrations show the interior features of the engine and describe fully all the working parts. To any one who is at all interested in the subject of launches or gas engines this catalogue will be of much value.

Torpedo launches manufactured by the Matthews Boat Company, Bascom, O., are fully described in a large folder which this company issues. This folder contains half-tone engravings of launches of standard design, and explains clearly the design and arrangement of the engine and its appurtenances, in addition to giving an excellent idea of the entire launch. The illustrations also show some of the different positions and uses of the Matthews adjustable canopy for launches, the top of which consists of a very light but strong framework of oak, bent over forms. The shape of the top gives liberal head room without giving the boat the appearance of being top-heavy.

Natural Woods.—Berry Bros., varnish manufacturers, Detroit, Mich., are presenting to the public a revised and enlarged edition of a book on wood finishing. The first issue of this book was so well received that the company believes the revised edition will meet with still wider favor, containing as it does much new matter of interest to both architects and wood finishers.

The United Electric Heating Company, 260 Randolph street, Chicago, Ill., is mailing a catalogue describing electric-heating devices. This company makes many claims for the superiority of its specialties, as they embody the correct principles of construction for durability and service. The illustrations show many kinds of iron cooking ovens, broilers, chafing and sterilizing dishes.

Vessel supplies manufactured by Geo. B. Carpenter and Company, 202-208 South Water street, Chicago, Ill., have one of the most complete catalogues devoted to them that we have seen for a long time. This catalogue is handsomely bound in leather. The text comprises 750 pages and is neatly printed on heavy paper. The index shows how comprehensive is the business of the company, for almost everything that is used on board ship is described in this catalogue. These specialties include cordage, twine, cotton duck, wire rope, cotton waste, hose, belting, packing, marine hardware, etc. A concise history of the company shows that it has had an uninterrupted business career of over sixty-five years. Because of the completeness of the catalogue and great expense necessary to prepare it, it is sent upon receipt of 8 cents.

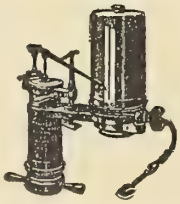
BUSINESS NOTES.

Electric Trolley Hoists.—The Sprague Electric Company, 527 West Thirty-fourth street, New York, N. Y., reports many sales and installations of its electric trolley hoists. These hoists are now in operation in some of the largest manufacturing plants in this country, and are economizing labor and increasing outputs to a wonderful extent. They are great labor-savers, and are designed to take care of that class of work weighing up to four tons for which the hand hoist is too slow, and which cannot be conveniently and economically handled by the electric traveling crane. In many machine shops of the usual design—a middle aisle spanned by traveling cranes, and side aisles over which galleries are located—the space under the galleries is not fully utilized, because a good power hoist to carry the work to and from the tools has not been obtainable. In most foundries the majority of loads to be lifted weigh less than four tons, and the operation of handling molds, ladles, etc., calls for fine adjustment and control of the hoisting apparatus. In shipyards and large manufacturing plants, where successive operations are conducted in separate buildings, the work must be transported from one to the other. By using the Sprague trolley hoist, running on overhead track, this may be accomplished at high speed and at small expense.

YOU'LL STOP AT "EUREKA"

IF YOU'LL BUT TRY IT

It fills out the uneven spots in the rod—keeps them smooth—increases power—saves one-half in a year's run—there are imitations.



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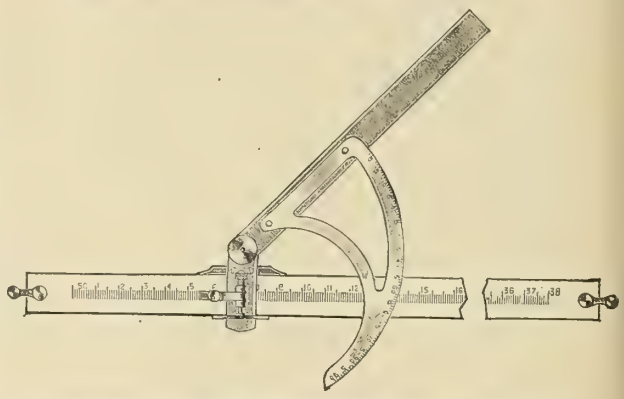
There's none quite so up-to-date as ROBERTSON THOMPSON—none are as reasonable in price.

JAS. L. ROBERTSON & SONS, New York

IF A

Starrett Protractor

is once used, to use any other will be like returning to a bad habit.

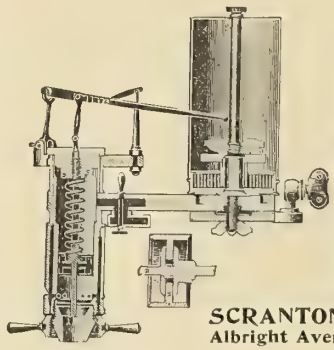


In Material, Design, Workmanship, and Accuracy, this instrument is not excelled.
Made with bevel arm 15 to 36 inches; auxiliary blades carried in stock up to 36 inches.

Send for our FREE CATALOGUE No. 17L, which tells of all the STARRETT TOOLS.

The L. S. STARRETT CO., ATHOL, MASS.

AN ENGINEER WANTED



A First-Class Indicator, Reducing Wheel and Planimeter.

Got them of us, at a price so low that he was astonished. YOU can do the same, and should send for our catalogue, which not only describes these instruments fully, but gives $ $ $ worth of instructions in their use. It is free.

We make also Steam Pumps, Steam Separators, Oil Extractors, Shaking Grates, and Furnace Blowers, all in the catalogue.

SCRANTON STEAM PUMP CO.
Albright Avenue, Scranton, Pa.

An Experience with Smooth-On.—George E. David, engineer, Department of Commerce and Labor, Bureau of Fishery, in writing recently to the Smooth-On Manufacturing Company, Jersey City, N. J., said: "In March, 1903, we bought of the Walworth Manufacturing Company, 132 Federal street, Boston, Mass., 25 pounds of your Smooth-On compound to repair a leaky boiler on which boiler makers had worked and had only succeeded in stopping the leaks for a short time. The boiler is of the Scotch type, and the leaks were around the end of the furnace. In applying the compound, I first cleaned the surface front inside the boiler and then washed it thoroughly with kerosene, painted on a coat of compound, and allowed it to stand twelve hours. I then mixed a thick putty of compound and pressed it well into the joint, let it stand twenty-four hours, and it was a success. The boiler has been in use now for three months and is perfectly tight. I have also used the compound for making pipe joints and have found it excellent. Please credit Marine Engineering Magazine, in which I first saw your advertisement."

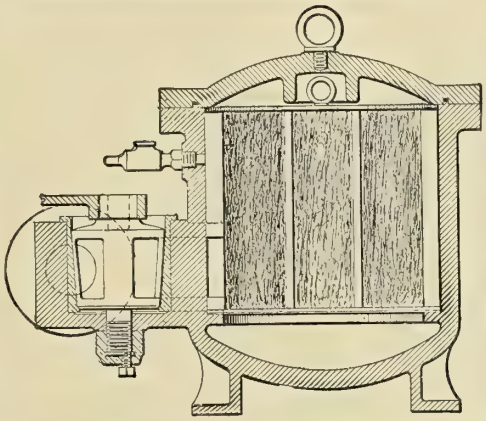
ALL power spent in overcoming friction is just so much taken out of your legitimate profits. Dixon's Graphite Grease is applied more easily, wastes less, and lubricates better than ordinary oils. It has numerous uses, and all of them are conclusive. Ask for booklet 75-i.

JOSEPH DIXON CRUCIBLE COMPANY,
JERSEY CITY, N. J.

Patent "Reflex" FEED WATER FILTERS

Will pay for themselves in less than a year by protecting your **Boilers** from **Grease, Oil** and **All Mechanical Impurities.**

For Steamships, Yachts, Tugs, Factories



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Try them—If you don't like them we'll take them back and refund purchase price.

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EQUIPMENT OF RAILROAD SHOP.—The Crocker-Wheeler Company, Ampere, N. J., reports an increasing demand for the Crocker-Wheeler system for the distribution of electric power about machine shops or manufacturing plants. This system possesses prominent and distinguishing machine characteristics. Standard apparatus is used throughout, with motors readily applied to either old or new tools. A two-way system furnishes power to the lines, cranes, and constant-speed motors, with the addition of a balancing transformer and two intermediate wires for the variable-speed tools. The capacity of this balancer is but a small percentage of the total power of the motors on this circuit, but it provides six fundamental voltages—the basis of an economical, simple, and efficient method of speed control.

A GROWING PLANT.—Still growing is the plant of the Scranton Steam Pump Company, Scranton, Pa. Several months ago we noted in these columns the acquisition by this company of the plant of the American Foundry and Machinery Company, Kingston, Pa., which the Scranton Steam Pump Company purchased for their Wyoming Valley business. A few weeks after this we were informed that a new foundry was in process of erection, the size of this being 135 by 280 feet, giving them their present large foundry as an erecting shop. We are now informed that they have still further branched out by purchasing the Poore Pump Manufacturing Company, which is one block from their present works. We are informed that this plant will be devoted almost exclusively to its smaller duplex pumps, Lippincott steam specialties, such as reducing wheels, planimeters, steam separators, and oil extractors, shaking grates, furnace blowers, etc., as it has never been able to fill all the orders that it has received for these goods, but hopes to with this present addition to its works.

SUCCESSFUL BIDDERS.—The contract for roofing materials for the army buildings in the Philippines has at last been finally awarded to the H. W. Johns-Manville Company, 100 William street, New York, N. Y., against the acceptance of whose bid several protests were filed by rival concerns. This roofing contract has been one of the biggest controversies in the War Department, and it required the services of the chemist of the supervising architect's office of the Treasury Department to determine the relative merits of the competitive samples. The endorsement from that source settled the question largely for the War Department, but a helpful agency to that end was the fact that the successful bidder insured the government against loss in the delivery of the material at Manila, and gave a guaranty, supported by a bond of $22,000, for the preservation of the material for a period of ten years, promising to replace in that time any of the roofing found to be defective. The fact of insurance is an important one just now, especially as there is a question between the department and another firm as to which shall replace some roofing material which was lost in transit to Manila.

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Write for our BLUE CATALOGUE "D." showing complete line of engineers' pipe fitting tools.

Change of Location.—The Plunger Elevator Company, which formerly occupied offices at 156 Fifth avenue, has moved to the Whitehall Building, 17 Battery place, New York city. This move was occasioned by the demand for increased office space and by the desirability of a down-town location. Among the many orders recently received by this concern was one for ten elevators for the new factory building of Eaton, Cole and Burnham Company, Bridgeport, Conn.

Coal-handling Apparatus.—A record of raising 320 tons of coal per hour a distance of 90 feet above tide-water and delivering it to storage pockets has been established at the Lincoln wharf power station of the Boston Elevated Railroad Company. The coal-handling machine was turned out by the C. W. Hunt Company, West New Brighton, N. Y., and consists of a standard Hunt steeple-tower rig, the moving gear and coal cracker being electrically driven, and the hoisting engine direct-connected. The capacity of the shovel is two tons.

Storing of Yachts.—The Hanley Construction Company, Boston, Mass., announces that it is in position to take charge of yachts during the winter. Its plant is situated at Quincy Point, within a short distance of Boston. Its storage basin has an area of 40,000 feet, with a depth of from 10 to 20 feet in low water, and, being land-locked, with minimum tides, affords protection from winter storm and floating ice. This location insures clean water, free from smoke and dust, and makes it an ideal place to fit out in the spring. This company also has locker accommodation, and large storage sheds for tenders and launches.

Water Purifier.—Sulphate of iron is one of the chemical products of the American Steel and Wire Company, Chicago, Ill. To demonstrate its particular use in the purification of water, exhaustive tests have been made under the supervision of a bacteriologist and a well-known chemist. The water-works system at Quincy, Ill., was selected as the plant at which to make the tests, because of the exacting conditions prevailing there, which would make favorable results all the more favorable It is desired by this company that the most scientific research and experiment be conducted, and nothing was omitted that could contribute to this end. The result is the most favorable to the employment of sulphate of iron for purification of water for domestic and commercial uses. This company, therefore, invites attention to the merits of sulphate of iron for the purpose indicated and recommends its use. Correspondence is invited, and further information desired from any of its representatives which are located in the majority of our larger cities.

Motors for Direct Current.—The Westinghouse Electric and Manufacturing Company, Pittsburg, Pa., is mailing a catalogue of its type S motors for direct current. This catalogue describes fully these motors and tells why they have become so popular. In the early days of electric driving, motors were designed solely for belted connection, and, while possessing the substantial base and frame familiar in the older designs of generators, they were neither compact nor easy of attachment to other machines, and little consideration was given to mechanical limitations other than those fixed by economy and production. Special effort was directed to attain perfection in electrical design and reliability in service. In the marvelous development of the last decade no electrical fact has become more firmly established than that the electric motor is unsurpassed for economy, convenience, and flexibility of application. As the motor now exists, it is the result of an evolution, first, along the lines of electrical performance, and, more recently, mechanical perfection. This evolution has developed the motor so that it is excellently adapted to meet the conditions under which it is to operate. For example, a frame is provided of minimum base and little bulk, so that the motor is not only suitable for belt driving, but is also admirably adapted for direct connection with machine tools or other machines where a self-contained, motor-driven outfit is required.

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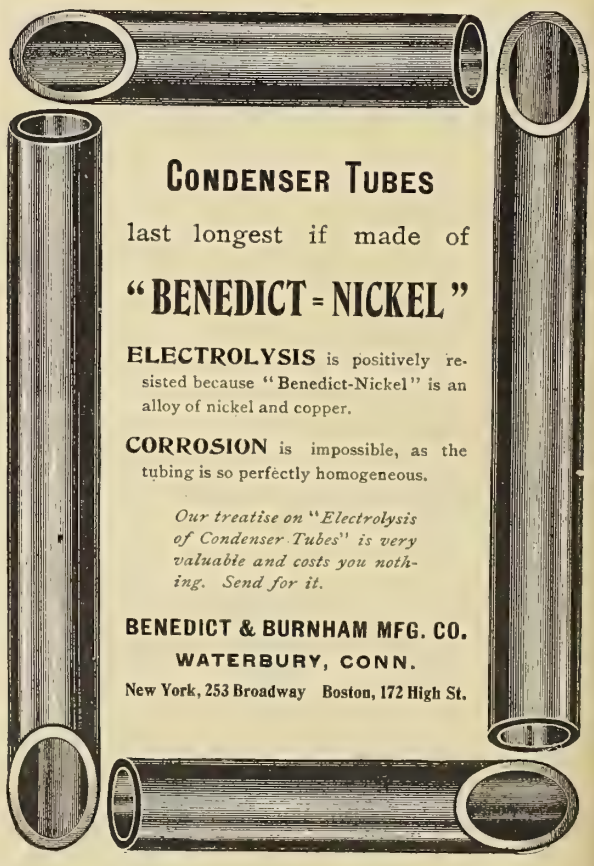
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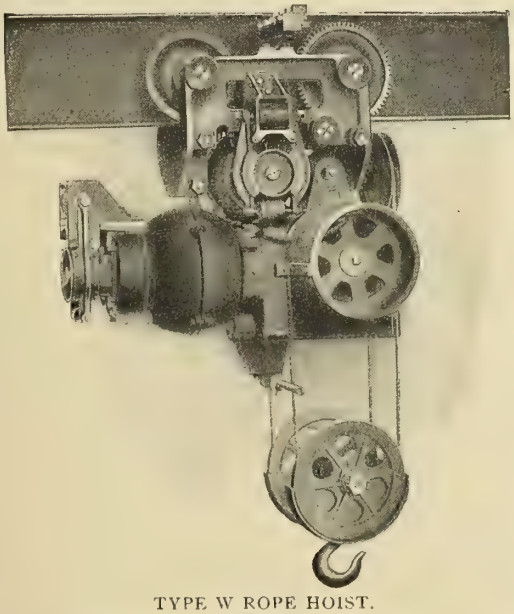
The American School of Correspondence, at Armour Institute of Technology, Chicago, Ill., invites your attention to its catalogue, which is sent on request. This school believes that it contains much information of interest to you personally on a subject of growing interest to all thoughtful people—correspondence instruction. Every one should be interested in this phase of popular education—a phase in which more progress will in all probability be made in the next five years than along all other lines of educational effort combined. That the people want this form of instruction is shown by the thousands who apply for help to Chautauqua and the various correspondence schools. It is a form of education that has come to stay because it meets a real want, and the position that our representative periodicals take toward this new educational force will do much to hasten or retard its good influence. Many colleges, such as the University of Chicago and Armour Institute of Technology, have adopted it as a regular feature of their work, and others have it under serious consideration. Your attention is called to the following distinctive features of the American School of Correspondence at Armour Institute of Technology. The instruction is under the direction of members of the faculty of Armour Institute of Technology, and Dr. Gunsaulus, president of that institute, has given the work his enthusiastic support and personal supervision. Due credit will be given for the work covered by correspondence should the student later pursue his studies at the institute. The instruction papers are prepared especially for home study, and are used as text books by the government in the School of Submarine Defense at Fort Totten, N. Y.; by the Westinghouse Electric and Manufacturing Company, of Pittsburg, which is using over seven hundred of the papers in the shop school maintained for its employees. The paper on "Storage Batteries" is used as a text book for the senior class in electrical engineering at Columbia University. This school will be very glad to send you specimen copies of its instruction paper and give you any further information you may desire.

SPRAGUE HOISTS



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They are economizing labor and increasing outputs to a wonderful extent. Write for descriptive bulletin No. 21315.

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Change of Address.—William T. Keough, consulting engineer and naval architect, has removed his office to 508 Board of Trade Building, 131 State street, Boston, Mass. Mr. Keough makes a specialty of designing and constructing vessels and machinery of all kinds.

Racine Automatic Vertical Engines.—The recent popularity of this engine is shown by the numerous orders the Racine Engine and Iron Works, Racine, Wis., has recently received. These engines are suitable for all power purposes where close regulation, extreme economy, and uniform power are required. They are specially adapted for operating electrical apparatus, both direct-connected or belted.

Vessel Supplies of All Descriptions.—Geo. B. Carpenter and Company, Chicago, Ill., are mailing a most complete and compact catalogue of their various lines of goods. This company manufactures everything in the line of cordage, twine, cotton duck, wire rope, cotton waste, blocks, hose, belting, packing, and marine hardware. It has been the constant aim of this well-known firm to supply everything that the trade has demanded, and, for convenience of its out-of-town customers, a number of men are employed whose business it is to purchase goods outside of regular lines carried. Almost everything can be bought in such a universal market as Chicago, and, being large buyers of all kinds of merchandise, the company as a rule is able to obtain for customers better prices than they could otherwise get.

Lubricating Compounds.—The Hall Manufacturing Company, New York, N. Y., desires to call the attention of all mill owners or manufacturers, or any persons using machinery of any kind, if they be interested in obtaining a lubricant for their machinery that would prove safe, economical, and reliable, to the Hall's lubricating compounds. These lubricants are a combination of highest grades of mineral lubricating oils, combined with such a process as to make up a semi-solid substance which, when properly applied to the surfaces to be lubricated, reduces the friction produced by the working of metal upon metal to the lowest possible point, and this without the loss of more of the substance than is actually required to do the work. This not only proves an economy in lubrication, as it obviates waste of lubricating substance, but, above all, a greater action is produced from the proper lubrication of machinery, as reducing friction necessarily economizes power, and the practical deduction from this fact is the saving of fuel. These compounds are manufactured by such a process that they remain practically of the same consistency under all ordinary degrees of temperature and are not affected by climatic changes. The best means of application is found by use of pressure or automatic-feed grease cups especially adapted for the purpose. This, however, only applies to such parts of machinery as are lubricated by means of cups; on journals that have been lubricated with tallow or suet, a special grease made by this company for this purpose may be substituted.

Elevator for U. S. Receiving Ship Hancock.—The U. S. Navy Department ordered from the Otis Elevator Company, New York, N. Y., an electric dumbwaiter with push-button control to be installed on U. S. receiving ship *Hancock*. The car will run from the galley on the lower deck to the mess room on the upper deck, with a third landing at the deck intermediate. The rated capacity of the dumbwaiter will be 250 pounds at 75 feet per minute and the car travel will be 30 feet.

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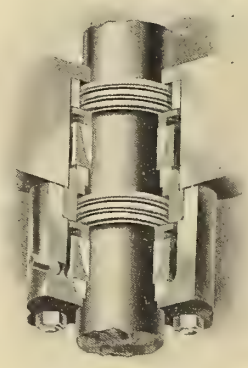

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Will Occupy New Factory.—The Buffalo Gasoline Motor Company announces its removal to a spacious and splendidly-equipped factory at 1280 to 1286 Niagara street, Buffalo, N. Y. The unprecedented demand for the Buffalo motors, and the delays incident to building and moving, have inconvenienced its customers during the past season, but this company is now able to assure its friends that the present facilities enable it to fill all orders for marine motors promptly

Convenient Fire-bucket Tank.—The Safety Fire-Extinguisher Company, Spalding Building, 33 West Forty-second street, New York, N. Y., has placed on the market a very convenient, air-tight tank, containing a supply of chemical solution which is more effective than many times the same quantity of water in extinguishing a fire. The safety fire-bucket tank and buckets are made of heavy galvanized iron and are tinned to prevent rust. Each bucket has two lugs on the outside, so that when they are placed in the tank, one inside the other, they rest on lugs, and consequently cannot bind or stick. Every tank is supplied with a bag of dry compound, powder form, with full directions for using. This powder, dissolved in water, forms a chemical solution with which the tank is filled. The solution, in contact with flame, forms a gas which will not support combustion. This tank, being ornamental, can be put in a conspicuous place. Pails are, as a rule, unsightly, take up much space, and need refilling frequently; even then the water in them becomes stagnant.

Consolidation of Interests.—The Brown-Cochran Company has been incorporated by men particularly interested in the Cochran Company, Lorain, O., and the Brown Gas Engine Company, Columbus, O., for the purpose of providing larger capital and better facilities for the manufacture and sale of the products of the two companies. All patterns, drawings, patents, and good will of the constituent companies have been acquired by the new company. An entirely new plant has been constructed and equipped with the latest and best machine tools, and provision has been made for carrying a full stock of parts and complete machines to facilitate prompt shipment of engines and refrigerating tools of any desired size. Several offices have been opened by this company in the principal cities in the United States and placed in charge of experienced men. The machinery heretofore made by the Cochran Company and the Brown Gas Engine Company has been well and favorably known. It is the purpose of the Brown-Cochran Company to maintain this high standard, while at the same time developing improvements wherever experience has shown such to be desirable or possible.

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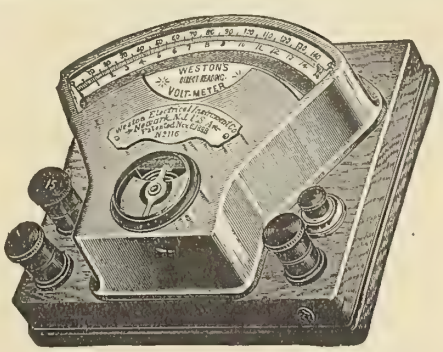

WESTON Standard Portable Direct Reading Voltmeter.

Examinations for Inspector of Hulls.—The United States Civil Service Commission announces an examination, to be held on October 7-8, 1903, at the places mentioned below, to secure eligibles from which to make certifications to fill the vacancies in the position of assistant inspector of hulls on steam vessels at Seattle, Wash., at $1,500 per annum, and similar vacancies as they may occur at seaboard and inland ports. The examinations for inland ports will consist of the subjects mentioned as follows: No. 1, writing. No. 2, arithmetic (this subject will comprise problems in common and decimal fractions, mensuration, and square root). No. 3, hull construction; comprising questions relating to the construction and strength of wood and iron hulls of vessels, and a description of the various parts and method of joining the same. No. 4, pilot rules and inland navigation; comprising questions on pilot rules of the Board of Supervising Inspectors of Steam Vessels and Inland Navigation. No. 5, lifeboats and liferafts; comprising questions relating to the capacity of lifeboats and liferafts. The examination for seaboard ports will consist of the following subjects: No. 1, letter writing; a letter of not less than 100 words on some subject of general interest. Competitors will be permitted to select one of two subjects given. No. 2, arithmetic; comprising problems in common and decimal fractions, mensuration, and square root. No. 3, hull construction; comprising questions relating to the construction and strength of wood and hulls of vessels, and a description of the various parts and the method of joining them. No. 4, pilot rules and inland navigation; comprising questions on the pilot rules of the Board of Supervising Inspectors of Steam Vessels and Inland Navigation. No. 5, lifeboats and liferafts; comprising questions relating to the capacity of lifeboats and liferafts. No. 6, sea navigation. Applicants for the position of local inspector of hulls for seaboard ports must have had at least five years' actual practical experience as master or chief mate of a seagoing steam vessel, a portion of which time must have been on seagoing vessels of 500 gross tons or over. For inland ports, applicants must have had at least five years' actual practical experience as master or first-class pilot of steam vessels of over 100 gross tons. In either case a portion of the required five-year experience must have been within the five years next preceding the date of application, which five years' experience must have been under United States license of the highest grade granted upon the waters on which the applicant has been so employed. The experience as master must have been on vessels required by law to carry a licensed master. The fact that he has been so licensed must be recorded in the Treasury Department. The applicants must be free from color blindness. The ports at which the examinations are held are: Boston, Mass.; Baltimore, Md.; New York, N. Y.; Norfolk, Va.; New Orleans, La.; Portland, Ore.; Philadelphia, Pa.; San Francisco, Cal., and Seattle, Wash. The applicant for assistant inspector of hulls must have the same qualifications as for local inspector, except that the required term of service under license must be three years, a portion of which service must have been within the five years next preceding the date of application. At the port of New York some of the positions do not require a knowledge of sea navigation, and for these there are necessary only requirements for inland port positions. At this port, therefore, the subject of sea navigation will be optional. All applicants qualified for seaport positions are advised to take this subject, as their prospects for appointment are thereby increased. This examination is open to all citizens of the United States who comply with the requirements. Competitors will be rated without regard to any consideration other than the qualifications shown in their examination papers, and eligibles will be served strictly in accordance with the civil service law and rules. Persons who desire to compete should at once apply to the secretary of the local board of examiners.

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REMARKS:—This specimen is a black magnetic oxid of iron pigment of high commercial purity.

RUDOLF DEROODE, Ph. D.

Glens Falls, N. Y., May 30, 1903.

Dr. Rudolf deRoode is a Doctor of Philosophy ('90) from the Johns Hopkins University; a member of various Chemical Societies of Germany, England and America; was formerly Lecture Assistant and Fellow in Chemistry at the Johns Hopkins University; a Chemist in the U. S. Government service; Chemist of the American Graphophone Co. of Bridgeport, Conn., and Analytical Chemist for Fraser & Co., of New York City. He is at present Chemist of the International Paper Co., of New York City, and is Superintendent of their Bureau of Tests located in Glens Falls, N. Y.

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Vessels Classified.—The American Bureau of Shipping, 66 Beaver street, New York, N. Y., rates the following among other vessels recently classified by this Bureau: American screw *Maine,* American screw *Kiowa,* American screw *City of Sydney,* American side-wheeler *Whitney,* American schooner *George W. Truitt,* American schooner *John B. Biemiller,* American schooner *Dorothy Palmer,* American tern *Harry Knowlton,* American tern *John C. Greggory,* American tern *William L. Elkins,* American barkentine *Addie Merrill,* American bark *Boylston,* American barkentine *Rose Innes,* American barge *Hattie,* American barge *Liberty,* American bark *Charles B. Kenney,* British schooner *Basil M. Caldeit,* British tern *Leah A. Whidden,* British tern *Silver Leaf,* British tern *Catherine,* British tern *B. A. Post,* British half-brig *Acacia,* British half-brig *James Daly,* British barkentine *Gaspe,* Mexican screw *Tampico,* Swedish tern Gunilla, Swedish schooner *Hilda,* Swedish half-brig *Ida.*

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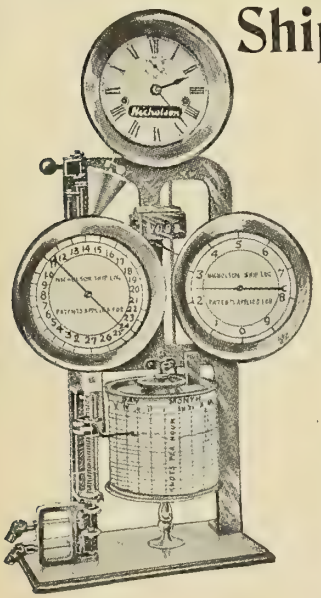

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A Modern Factory.—To meet the demand of increasing business, Wyman and Gordon, Worcester, Mass., are making plans for extensive buildings so designed that they may be erected in sections as the business requires. While it is proposed to begin with a medium-sized plant, this company is determined to make it convenient and equip it with the best forging machinery that can be procured.

A Popular Snap Hook.—It is interesting to know that a portion of the snap hooks used on the *Reliance* were furnished by the Delaware Marine Supply Manufacturing Company, Wilmington, Del., whose specialties in the marine line are rapidly gaining for them a most enviable reputation. These hooks were patented in 1902 by Capt. J. M. Into, Bristol, R. I., and the fact that Capt. Charles Barr used them on the cup defender is sufficient guarantee as to their superiority.

A Highly-recommended Engine.—To supply a demand for an engine that will operate successfully has enlisted the efforts of the Fuller Company, Detroit, Mich. No matter how well and carefully a double-acting engine may be designed and built, it will, as a rule, run noiselessly and smoothly for only a very short time, as the slightest wear will cause it to bind. The introduction of the single-acting type of engine, which this company has recently placed on the market for high-speed work, has eliminated some of the difficulties, but has, on the other hand, introduced new difficulties of another kind. This new engine combines the advantages of both without their disadvantages. This engine is set vertical, and has the usual cylinders, piston rod, crosshead, guides, etc., of the double-acting type, all enclosed and mounted for splash lubrication. The frame is furnished with large doors and crank case, both back and front, permitting of quick and easy access to all parts, as in the ordinary open type.

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THE COLOR OF RAINBOW PACKING IS RED

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5/8 in.
} **For Hand Holes.**

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TRADE PUBLICATIONS.

Signal lamps are discussed in an interesting catalogue issued by Russell and Watson, 145 Main street, Buffalo, N. Y. The text describes the various lamps manufactured by them, headlights, pier lamps, anchor lamps, vessel torches, binnacle lamps, steel ranges, etc.

The Wilkinson stoker has a most complete catalogue devoted to it, which is now being distributed by the Wilkinson Manufacturing Company, Bridgeport, Montgomery County, Pa. Many testimonials from users of the stoker appear in this pamphlet.

The subject of belt conveyors is considered in the catalogue issued by the Link-Belt Engineering Company, Nicetown, Philadelphia, Pa. This catalogue is printed on excellent paper, and fully illustrates conveyors employing cotton or rubber belts of a uniform ply, for the handling of materials.

The Direct Separator Company, Syracuse, N. Y., is mailing a leaflet fully describing the Sweets marine-boiler steam separator. A cut in this catalogue shows one form of separator designed to take the place of a dry pipe in a boiler when there is not room for a separator near the engine in which steam is to be used.

In order to satisfy the many requests for information regarding the Webster motor valve, the Warren-Webster Company, Camden, N. J., is issuing a special appendix to Part 5 of its general catalogue, to illustrate and describe the Webster motor valve for use in connection with the Webster system of low-pressure steam circulation for heating service.

The Fosdick Machine Tool Company, Cincinnati, O., is presenting a very handsome catalogue, in which it has assembled illustrations and descriptions of its radial drills. All cuts have been made from photographs and are exact reproductions of the machines. In this catalogue the company has endeavored to give a correct idea of the design and construction of the machines of its own manufacture.

Improved pneumatic tools, manufactured by the Rand Drill Company, 128 Broadway, New York, N. Y., are described in a very complete folder which this company is now mailing. The tools include a full line for clipping, calking, beading, riveting, drilling, and boring purposes. The illustrations are very numerous, showing the tools in operation. The text is complete and very concise, and any one who is interested in the use of pneumatic tools should have a catalogue.

The Philip Carey Manufacturing Co., Lockland, O., has issued a most attractive catalogue. This firm manufactures Carey's magnesia flexible cement roofing, magnesia and asbestos steam-pipe and boiler coverings, asbestos and asphalt materials, paints for tin, iron, steel, and all classes of metal and felt surfaces. Its catalogue is interesting, as giving a picture of the first factory as it existed in 1873, together with illustrations of buildings upon which has been used the Carey roofing. There is in addition a wealth of information for builders, architects, and property owners.

A very handsome catalogue is being distributed by the Kennedy Valve Manufacturing Company, manufacturers of valves, hydrants, etc., of 57 Beekman street, New York city, with works at Coxsackie, N. Y. The catalogue measures 9 by 5 inches, and is in the most convenient form for carrying around and displaying their various lines. It contains 128 pages and is printed on heavy coated paper. The catalogue is divided into sections. Section A describes and illustrates sectional views of the different types and details of gate valves. Section B describes and illustrates bronze gate valves. Section C illustrates special hose valves and Siamese connections. Section D is devoted to iron-body, bronze-mounted, and all-iron gate valves and indicator devices for automatic-sprinkler systems. Section E is devoted to globe, angle, radiator, and corner valves. Section F is devoted to hydrants, extension valve boxes, and floor stands. This catalogue will be sent upon request to interested parties mentioning MARINE ENGINEERING.

When writing to advertisers please refer to MARINE ENGINEERING.

Those interested in 1, 2, or 4-cylinder gasoline engines, for which the makers claim the best material and workmanship and highest efficiency, should get the catalogue of the Hoffman Motor Company, 32 West Randolph street, Chicago, Ill.

A new illustrated catalogue regarding the Salamandrine boiler is now being distributed by the Salamandrine Boiler Company, Newark, N. J. This boiler is used in automobiles, and steam yachts, launches, and other craft where the power does not exceed 100 horse power.

Searchlights and projectors, which the Carlisle and Finch Company, Cincinnati, O., manufactures, are minutely described in the catalogue recently issued. There are a number of illustrations, with sufficient text to fully describe the several types of projectors.

Wireless telegraphy is fully described in a catalogue issued by the Thomas E. Clark Wireless Telegraph Company, manufacturers of wireless telegraph instruments, Detroit, Mich. In this catalogue the company has endeavored to explain fully the many advantages offered by this system.

Asbestos Filtering Cloths.—The H. W. Johns-Manville Company, 100 William street, New York, N. Y., is mailing a postal card containing two samples of its filtering cloth, which is used for purifying water and filtering acids. It is also intended for use in smelting works, or in any place where protection against fire and heat from molten metal is desired. These samples will be sent on request.

Williamson Bros., Philadelphia, Pa., manufacturers of hoisting, winding, and ship-steering engines, locomotive steam cranes, stationary and portable engines, tanks, etc., have issued a catalogue in which their specialties are splendidly described. This catalogue is well printed and equally well illustrated, and is submitted with the intention of showing a great variety of designs suitable for all kinds of work. The many tables shown add much value to the catalogue.

Newton Machine Tool Works, Philadelphia, Pa., is mailing a large catalogue devoted to army and navy, railway-joiner, machine-shop equipment, and engineering specialties in metal-working machinery. The text covers 250 pages and is neatly printed on heavy coated paper. The index shows an enormous stock of almost everything that is made for the aforesaid equipment, and illustrations accompanying descriptions help to explain for what work a particular machine is intended. To any one interested in this subject the catalogue will be of value.

BUSINESS NOTES.

A Liberal Offer.—E. F. Houghton and Company, Philadelphia, Pa., are mailing an illustrated catalogue giving details of steam traps. If you are desirous of testing a trap, one will be sent you for a thirty days' trial, at the end of which time it may be returned to them, if you so desire, and the charges will be canceled. All traps are guaranteed by the company for a period of two years.

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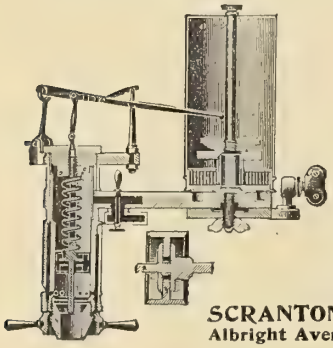

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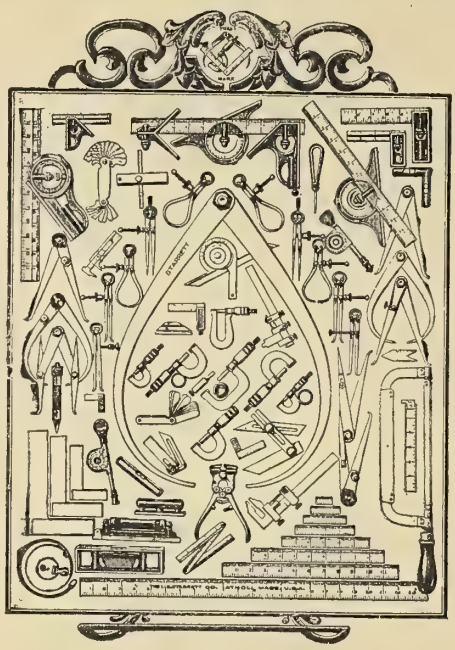

The Starrett Catalogue No. 17 L will give you the latest tool news.

The L. S. STARRETT CO.
ATHOL, MASS., - - U. S. A.

New Sales Offices.—The Stanley Electric Manufacturing Company, Pittsfield, Mass., announces the opening of two new sales offices, one at Cincinnati, O., in the Perin Building, which is in charge of O. H. P. Fant, and the other in the Century Building, St. Louis, Mo., in charge of S. Johnson. This company has recently sold a 2,000-kilowatt revolving field generator to the Memphis Consolidated Gas and Electric Company, Memphis, Tenn.

Vessels Classified.—Among the vessels recently classified by the American Bureau of Shipping, 66 Beaver street, New York, are the following: American screw *Seminole;* American barkentine *Stephen G. Hart;* American schooners *George M. Grant, Elizabeth Palmer, Elizabeth T. Doyle;* American terns *Oliver S. Barrett, Luther T. Garretson, Phillips M. Brooks, Carrie A. Bucknam, Georgia D. Jenkins, Nantasket, George H. Ames, Helen Stewart, Emma S. Lord, Carrie Strong,* and *Viator;* British tern *Arona:* British schooner *Lavonia;* British steamship *Strathcona;* and Swedish schooner *John.*

A Serviceable Packing.—The name of "France" has become associated to such an extent with the manufacture of metallic packing only, that it will be a surprise to many engineering people to learn that they can now secure for any purpose a superior fibrous packing from this company, and also obtain gaskets, water-gauge glass, washers, etc., to be known as "Steam Stopper" and "Water Stopper" brands. The packing has been on the market for about two years, but the manufacturers have not endeavored to push its sale, preferring to wait until fully satisfied that it had demonstrated its superiority. Now, however, they have struck upon a novel method of bringing it to the attention of all steam users, by offering every conceivable tool that an engineer, master mechanic, or student could use in his duties around the plant, ranging from a monkey wrench to an indicator. Further information in regard to their proposed methods may be had by addressing the home office, France Packing Company, 6514 State road, Tacony, Philadelphia, Pa.

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THERE are seven degrees of hardness in Dixon's Graphite Cup Greases. The softest are for use on light high-speed machinery; the harder grades for heavier work. In making these greases, we use only Dixon's Pure Flake Graphite. Ask for booklet 75-I.

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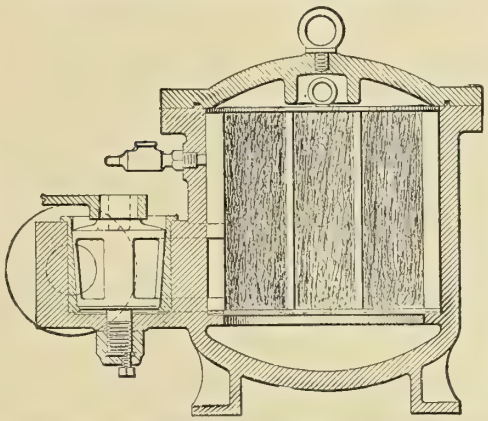

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FAMILIAR WITH PACKING.—The New York office of the Crandall Packing Company, 123 Liberty street, New York, N. Y., has recently added to its already large force of salesmen Mr. John Dill, who makes a specialty of marine trade. Mr. Dill has been a marine engineer, and is thoroughly acquainted with all sizes of packing for marine service.

A RELIABLE PIPE-JOINT COMPOUND.—The Dixon graphite pipe-joint compound, made by the Joseph Dixon Crucible Company, Jersey City, N. J., is rapidly pushing to the front. Large orders are constantly coming in, while the trade in smaller packages, which is handled by the dealers, is also increasing. One company recently ordered 600 pounds of this compound in small packages for use in its various plants. This compound is used to good advantage on all pipe joints, gasket surfaces, bolts, water-tube caps, and in many other places on steamships.

A RELIABLE LUBRICANT.—Judging from recent deliveries, the popularity of the Vulcan lubricant, manufactured by A. F. Boettcher, Rowlands, Pike County, Pa., continues. The Vulcan lubricant is a highly-approved lubricant for milling, cutting, drilling, boring, shearing, punching, screw cutting, tempering, etc. Its merits are: efficiency of action, cheapness, and non-injurious effect upon the tools and the work it is used on. When dissolved it floats as freely as oil, as it is made from oil stock only. The manufacturer, to induce one to give it a thorough test, will send a large quantity of this lubricant on trial, and, should it not prove satisfactory, will take it back upon request.

A CANADIAN WESTINGHOUSE COMPANY ORGANIZED.—At a meeting recently, presided over by Mr. George Westinghouse, the Canadian Westinghouse Company, Ltd., was organized, with a capital of $2,500,000. The new company is to be known as the Canadian Westinghouse Company, Ltd., and is a consolidation of the Westinghouse interests in Canada, which heretofore have been conducted individually. It will take over all the property, patents, and other interests of the constituent companies, including the sale organization and business of Ahearn and Soper, Ottawa. Ground will soon be broken and the erection of new buildings will follow as fast as possible. When it is considered that the Westinghouse Manufacturing Company, Pittsburg, Pa., alone has had sales in the Dominion amounting to about $2,000,000, the importance of this addition to the Canadian industry cannot be overestimated. It will be remembered that, in addition to his American undertakings, Mr. George Westinghouse has successfully established large offices in Europe, the largest of which was the British Westinghouse Electric and Manufacturing Company, which has constructed most of the important electrical installations in Great Britain, such as the underground railways of London and the electrification of the Mersey Railway. In addition there are the Westinghouse companies of France, Germany, and Russia, each with a large and prosperous manufacturing establishment.

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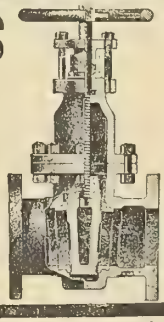

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New York, Park Row Building. **WALWORTH MFG. CO.,** Boston, 128 Federal Street.
Write for our BLUE CATALOGUE "D." showing complete line of engineers' pipe fitting tools.

Will Increase Office Space.—The Pittsburg branch of the H. W. Johns-Manville Company, 100 William street, New York, on account of increased business, has secured larger quarters and is now occupying an entire building at 218 and 220 First avenue, Pittsburg, Pa.

Increases Capacity.—Worth Brothers Company, Philadelphia, Pa., announces the completion of its new plate mill, which is one of the largest in the United States. It is modern in every respect, completely supplied with all the latest improvements, machinery, and labor-saving devices, such as large guillotine shears, straightening rolls, etc., to insure as nearly perfect plates as it is possible to produce. This company has now capacity for producing from 4,500 to 5,000 tons of plate per week, which will enable it to make exceedingly prompt deliveries.

A New Supply Depot.—To further facilitate the prompt filling of orders, the Sawyer-Man Electric Company, 510 West 23d street, New York, has recently established a distribution plant at the central stores of the terminal warehouse, West 23d street, New York, N. Y. Here over a million lamps are kept in stock, so that any and all demands for them may be speedily and completely filled. A similar depot is situated at 30th and Market streets, Philadelphia, Pa., and others in Boston, Buffalo, Syracuse, Pittsburg, Chicago, Denver, St. Louis, Atlanta, San Francisco, Seattle, and other centers of trade.

Some Facts Concerning Ferrofix.—To the Pich process for brazing cast iron the attention of the Boston Society of Civil Engineers was recently called. Ferrofix seems to possess features that would make it of great utility to the engineering profession. The process mentioned consists of the use of a flux and a soldering compound invented and patented by Frederick Pich. In this country, shop and territorial rights to use the process may be obtained from the American Ferrofix Company, New York, N. Y., owner of the patent for the United States; but the actual work of repairing is done by the American Brazing Company, which is operating repair shops in most of the chief cities throughout the United States. To test the efficiency of this process, a cast-iron standard was procured which was about 12 inches long by 3-8 inch thick, and which varied in width from 11-16 inch to 3 inches. At a point where the width was 1 3-4 inches there was a screw hole 1-8 inch diameter by 1-4 inch deep. This casting was placed upon an anvil and broken in two places by blows with a hammer. One of the fractures passed through the screw hole. To make the conditions still more trying, one face of the longer fracture was smeared with oil and dirt and the other with asphalt varnish. The broken and befouled standard was then subjected to the operation of brazing for 15 minutes; later the standard was again placed upon the anvil and struck with a hammer upon the shorter of the newly-brazed joints. The blow caused two new breaks, one on each side of the brazed fracture, but neither approaching it within 1-8 of an inch. Upon striking the longer brazed joint a new fracture developed, beginning about 1-16 inch from one side of the brazing, extending thence to the screw hole, crossing from there to the opposite side of the original fracture, and continuing to the other side of the standard. Both faces of the new fracture showed clean, cast-iron surfaces, with no traces of the brazing except in the screw holes, although the new break was mostly within 1-32 inch of the brazed joint. Ferrofix has recently received the endorsement of the American Society of Mechanical Engineers, Boston Society of Civil Engineers, and Franklin Institute, Boston School of Technology, and many other leading universities, and enjoys the record of having been approved as a valuable and useful commodity by every mechanical engineer who has used it. It has been the object of this company to receive the endorsement of every such engineer that could be found. Franchises have been sold within the States of Michigan, New York, Pennsylvania, Massachusetts, Rhode Island, and Missouri.

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63 Fifth Avenue, New York City

A Good Elevator.—The escalator made by the Otis Elevator Company, New York city, is showing its value in many places where this company has installed it. This system has many advantages, among which may be mentioned the absence of doors, extraordinary capacity, economy of operation, and, when contrasted with an equivalent elevator service, economy in first cost. One can fully appreciate the magnitude of the carrying capacity when it is realized that 4,000 steps per hour arrive at one landing; each step readily accommodates three passengers, and the capacity of the escalator is, therefore, 12,000 passengers per hour. In certain large stores where this is in use more than 6,000 passengers have been carried in that interval. In one establishment the count reveals that the escalator took from the first floor four times the number of people that were taken by the fourteen elevators. This company is now introducing a new type of escalator, with steps designed for one person each, with a capacity of 4,000 passengers per hour.

Of Interest to Yachtsmen.—At the close of the yachting season many owners are willing to dispose of their boats at very low figures. With a view to assisting those wishing to dispose of boats, Sadler, Perkins and Field, Maritime Building, New York, N. Y., call attention to the many exceptionally good bargains now on their books. In addition, if unable to meet a client's requirements in yachts already afloat, their designing department will furnish plans embodying the ideas of the respective clients. This firm, recognizing houseboating as one of the most pleasant forms of yachting, has made a specialty of this type of vessel for both deep and shallow waters, and will be pleased to show plans upon request, and give full information as to boats built or building.

Electro-hydraulic Valve.—Engberg's Electrical and Mechanical Works, St. Joseph, Mich., have disposed of a large number of valves in many of the cities in the United States. The value of the valve made by this company for shutting off standpipes and opening reservoirs, etc., made so that it may be operated without loss of time in case of fire, is generally recognized by engineers and water-work superintendents. These valves are not only a necessity in such places, but also in controlling irrigating and sewerage systems, as they may be operated from a distance. Scarcity of water pressure immediately after a fire alarm is often the direct cause of many disastrous fires with terrible loss of property. Many cities have the finest water-works systems, with inexhaustible supplies, but pumping into a reservoir or standpipe located a little out of the way, making it impossible for the water-works officials to get the proper valves closed and fire pressure applied without delay, and this delay often means a loss of property. With a valve at the standpipe or reservoir which can be operated from the pumping station, making direct pressure immediately available, the firemen will avert many otherwise disastrous fires, and the chances of the fire getting beyond control will be reduced to a minimum.

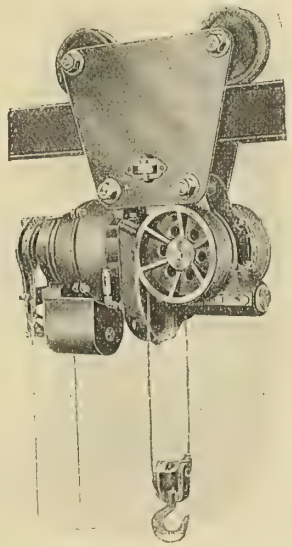
SPRAGUE HOISTS

are adapted to

SHIPYARDS, DOCKS, ETC.,

and are designed to handle that class of work for which the hand hoist is too slow and which cannot be conveniently and economically handled by traveling cranes.

They are economizing labor and increasing outputs to a wonderful extent. Write for descriptive bulletin No. 21315.



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STYLE B TROLLEY CARRIAGE.

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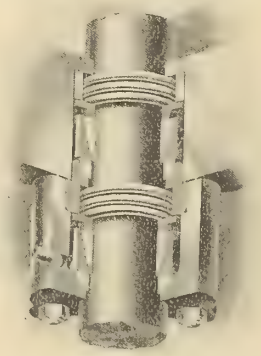
ATLANTA. BALTIMORE. BOSTON. CHICAGO. CINCINNATI.
PHILADELPHIA. PITTSBURG. ST. LOUIS.

Notice of Removal.—James H. Paine and Son, formerly of Boston, Mass., have moved their plant to Noank, Conn., where they have erected a new and modern establishment. Having more facilities, they will be in a greatly improved position for making repairs to the machinery of steamers, and for installing new outfits complete. They are but a short distance from the shipyard of Robert Palmer and Son, where all repairs on hull or joiner work will be made at the shortest notice.

No Infringement.—The attention of the Philip Carey Manufacturing Company, Lockland, O., has been called to the fact that a firm is sending letters o the magnesia-covering trade, claiming that the American Magnesia and Covering Company, manufacturing the company's magnesia coverings, is infringing patent rights of a royal concern in the manufacture of magnesia covering. The letters which have come to this company's attention are so misleading in their character that it has been decided, as only just to the trade, to contradict the misrepresentations contained therein. The patent which this cover company claimed for years upon its magnesia coverings expired July 20, 1903; prior to that time the concern entered suit on the same in the United States Circuit Court for the southern district of New York, and failed, after a full hearing, to get a preliminary injunction. No question remains, therefore, as to the right of the general public to manufacture, sell or use magnesia coverings containing 85 per cent. carbonate of magnesia. This company also claims a patent on certain machinery used by it in their business, and which, it claims, is used by the American Magnesia and Covering Company. The patent, if valid, could be infringed on only by one who makes, sells, or uses the machinery patented, and not by one who merely deals with the product manufactured by such machinery. Whatever may be the liability of the American Magnesia and Covering Company, no consumer of the product could possibly be liable in damages or otherwise for the purchase or use of the product.

MONEY SAVED



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Designing packing for special work is one of the features of our establishment.

Our catalogue will add materially to your stock of Packing knowledge.

THE UNITED STATES METALLIC PACKING COMPANY

427 North Thirteenth Street, Philadelphia, Pa.

509 Great Northern Building, Chicago, Ill.

MORAN BROTHERS, - - - - Seattle, Wash.

Motor-blower Outfit for U. S. Battleships.—The Holtzer-Cabot Electric Company, Brookline, Mass., has secured the contract for the motor-driven blower outfit for the United States battleships *Connecticut,* now building at the Brooklyn Navy Yard, and the *Iowa.* The two contracts aggregate 60 outfits and consist of small pressure blowers and steel-plate fans.

Reception Tendered the General Manager.—Charles H. Allen, secretary and general manager of the Norton Emery Wheel Company, Worcester, Mass., was given a welcome home, after an extended European trip, by the employees of this company. Mr. Allen reports that the emery-wheel making and the manufacture of grinding machines is in a progressive state in Europe. The reception given Mr. Allen was in charge of a committee composed of foremen of the different departments of the Norton Emery Wheel Works, assisted by a committee of five from the office.

A Reliable Governor.—It is not necessary to point out the great importance, both to the shipowner and engineer, of having a thoroughly reliable and efficient governor fitted to marine engines, one that is simple in construction and without delicate parts which would render it likely at any time to get out of order. The Storey marine governor, made by the International Marine Governor Company, Mount Holly, N. J., combines many of the requirements necessary for the successful working of a marine governor. It is simple in construction, there being but few parts, with none so delicate that they require the maker to adjust them. On the other hand, the engineer can keep them in good order and at all times ready for service. One of the valuable features of this governor is that it can be easily adjusted, so as to shut off the engine before the propeller leaves the water and to let on the steam as soon as it has returned to the water. It does not wait until increased speed has been reached before it can work, as is necessary in other governors. It can be very easily and quickly fitted to any marine engine in any engine room, as well as placed on marine engines when the boat is being fitted up. The construction of this governor is simple, there being two cylinders connected by a hollow tube, and partly filled with mercury connected to a steam cylinder by means of a lever and valves. The piston of the steam cylinder is connected direct to the reverse lever or throttle valve of the main engine, and closes off the steam as the propeller leaves the water and opens again on the return. This can be so adjusted as to have complete control of the steam at all times.

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So many of our readers have asked us for duplicates of the data cards which are published each month in connection with editorial articles, that we have decided to reprint them for the convenience of those who wish them for filing.

The cards will be white and of the regulation size, three by five inches.

The service will begin with the cards which have appeared on pages 356, 360, 365, 400, 407, and 422.

As it is impossible to tell in advance how many cards will be issued each month, we shall make the uniform charge of

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Payment may be made each month as orders are sent in, and in postage stamps.

Sample cards sent at any time upon request of those who wish to investigate the service.

Marine Engineering

309 Broadway, - New York, N. Y., U. S. A.

A LARGE ORDER FOR LIGHTS.—The Delaware Marine Supply Mfg. Company, Wilmington, Del., has completed a large order of hinged square lights and round lights—318 in all—for the New York Shipbuilding Company, Camden, N. J., to fit in the new steamers *Mongolia* and *Manchuria*, in a little over two months from the time of beginning work. The contract called for delivery on October 17 and all were shipped three days before that date. This company finished, in addition to this contract, during the same period, twenty-seven port lights, of Victor white bronze, of their patent design, for the steam yacht *Atlantic*, which is building at the yard of the Townsend-Downey Shipbuilding Company, Shooter Island, New York, for Wilson Marshall, of Bridgeport, Conn., from designs furnished by Messrs. Gardner and Cox; also large orders of snap hooks were supplied to Capt. J. M. Into, Bristol, R., of his patent design, and they have proven their excellence by being adopted for use on the *Reliance*. Numerous orders for air ports and car trimmings were also executed during this period, and the shops of the company are pushed to their fullest capacity at the present.

PLUGGING BROKEN STAYBOLTS.—Some reading matter of great importance to marine-boiler manufacturers is being distributed by the Falls Hollow Staybolt Company, Cuyahoga Falls, O. This company states: "It is surprising to note that some of our railways in these days of high boiler pressures will persist in plugging up holes in staybolts that have been broken in service, instead of making immediate repairs; this latter process being generally put off until the boiler is washed out, possibly several weeks later. Not only is such work criminal, but it destroys the object for which the drill bolt was adapted. Experience has taught that it is impossible, even with an expert, to locate broken bolts at all times, and it is due to this that the drill bolt has been adopted. The drilling is generally done by an inexperienced laborer, with the result that a large percentage of the holes is found away from the center of the bolt, and the bolt is naturally weakened. If it is done by the piecework system, cases have been found where the hole did not penetrate the thickness of the boiler shell. With the hollow bolt plugging this is out of the question. The plug is inserted from the outside to prevent the annoying escape of steam and water, which, of course, is driven into the fire box, a proceeding which means death to the fire. We do not believe that the parties guilty of these practices do so with any criminal intention, but it behooves the management to watch this more closely. Life and property are at stake, and certainly to the crews who man these engines every protection should be assured."

THE BEST STORY ever published OF AN ENGINEER'S LIFE BELOW THE GRATING is

THE PROFESSOR ON SHIPBOARD, - - - PRICE, $1.00

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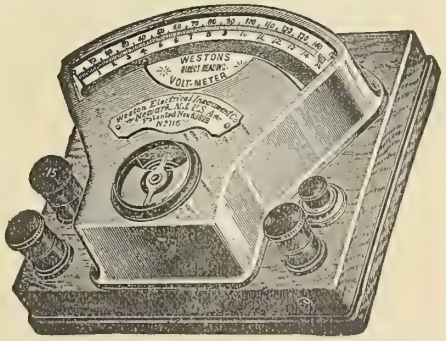

WESTON Standard Portable Direct Reading Voltmeter.

New Foundry and Pattern Departments.—For several years the B. F. Sturtevant Company, Hyde Park, Mass., has felt the excessive pressure of increased business and the necessity for much more extended facilities for manufacturing than were possessed by its old plant at Jamaica Plain, Mass. The fire which visited this plant in 1901 had the effect of definitely settling the question of removal, and plans were immediately begun for a thoroughly modern manufactory at Hyde Park, about nine miles from Boston, where the water supply is ample, and the space for dumping waste is sufficient to meet all requirements for years to come.

The plant comprises a commodious four-story office building, 45 feet by 125 feet; a three-story building, 80 feet by 500 feet, devoted to the manufacture of blowers, heaters, and galvanized iron work; another three-story building, 80 feet by 250 feet, on the first floor of which all engines will be tested, stored, and shipped, while the other floors will be utilized by the electrical department; a general machine shop, measuring 120 feet by 500 feet, with 40-foot side galleries, devoted principally to the building of engines; a forge shop, 40 feet by 100 feet; a two-story building of the same floor area, devoted exclusively to lockers and washing and sanitary facilities for the employees; a pattern and storage building, 80 feet by 150 feet in ground plan; a foundry, 170 feet by 350 feet; a power house, 80 feet square, with detached fire and service pump house. All told, the aggregate floor area of the buildings exceeds nine acres. The foundry and pattern departments were the first to be put in operation prior to the removal of the entire plant from Jamaica Plain.

The pattern building is divided at the middle by fire walls enclosing stairs, elevators, etc. One-half the building, with stories respectively 17 and 15 feet high, is devoted to the flask and pattern-making rooms; while the other half, provided with intermediate floors, making four in all, is utilized for pattern storage.

Around the pipe columns which support the floors of the pattern-storage end of the building are clamped the pattern-shelving brackets, which are adjustable at any height. All patterns are consecutively numbered upon the drawings as made. When delivered to the pattern-storage department proper locations are assigned, and records thereof made upon cards, one for each pattern. These cards are filed in the order of the pattern numbers. Four figures with the addition of a letter are in every case sufficient to locate a pattern. A given location, for instance, may be 2125 B; that is, it is upon the second floor, as shown by the first numeral, "2"; it is in the twelfth row of shelves and the third division of that row, as shown by the succeeding numerals, "125," and on the B level, the floor being designated A, and the letters B, C, D, etc., indicating the shelves in their order above.

The arrangement of the buildings, the result of the most careful study, is an endeavor to simplify in every way the matter of intertransportation. Numerous spur tracks permit of ready handling of incoming and outgoing freight, and a complete system of industrial railways connects all departments. The industrial system is equipped with 12-pound T-rails, laid 24 inches gauge on center, with turntables, trucks, cars, etc., all of which were specially designed and made by the Sturtevant Company.

Naturally the entire plant is heated and ventilated by the Sturtevant system. In the case of the pattern building, the apparatus, consisting of an engine-driven fan and steel pipe heater, is placed close to the division wall, and delivers the heated air into a vertical flue and thence to the various rooms. The foundry apparatus is located overhead in the end of one of the craneways, and is arranged to take fresh air from out of doors or return the air from the building and reheat it. Distribution of air is made through a system of overhead galvanized iron piping discharging downward to the floor. The apparatus utilizes exhaust steam. A complete underground tunnel system is provided for distribution of steam, electricity, compressed air, etc., and return of condensation.

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A Sample Free.—The Keystone Lubricating Company, 20th street and Allegheny avenue, Philadelphia, Pa., will send, free of charge, to any reader of Marine Engineering a sample of the "Keystone Grease," together with a brass cup in which it may be tested. The company calls attention to the fact that grease is cleaner than oil, as it does not splash, spill, or drip, and that it is an equally good lubricant, besides being much cheaper. There is a great and rapidly increasing demand for this product among up-to-date engineers, who assert that "Keystone Grease" fills a long-felt want.

The Editor of *Printers' Ink*
WRITES TO
The Editor of *Marine Engineering:*

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The "requisite qualification" is absolute proof of the claimed circulation.

THE STORY OF PHOEBE SNOW.

If you have ever taken a railroad trip you will enjoy the "Story of Phoebe Snow," which describes in a series of dainty pictures the experiences of a pretty girl who went to Buffalo. The illustrations are in seven colors, each reproducing a design of the girl in white which the Lackawanna Railroad has made so familiar in the last few months. The booklet has a particularly pleasing cover and will afford considerable amusement beside giving information which every traveler ought to know. It will be sent in response to request, accompanied by two cents in stamps, to T. W. Lee, General Passenger Agent, New York City.

Will Have Pittsburg Offices.—The Diamond Drill and Machine Company, Birdsboro, Pa., has opened an office in the Farmers' Bank Building, Pittsburg, Pa., which will be in charge of G. B. Nut.

A New Invention.—Foote, Pierson and Company, 82 and 84 Fulton street, New York, N. Y., have placed upon the market a lubricant known as "Lubria," which is claimed to be a clean and economical lubricant for all metal manipulation. Lubria is a substitute for oil, soap water, or any other lubricant, for which the manufacturing metal industries have long felt a great need, and its discovery meets the requirements from a practical standpoint. This lubricant is a liquid product, which dissolves instantly in water, making a white, oily, cooling fluid, which, in the proportion of 2 to 5 parts of Lubria, mixed with 100 parts of water, gives a perfect lubricant for such purposes as drilling, turning, tapping, cutting, milling, etc., and all automatic machine work.

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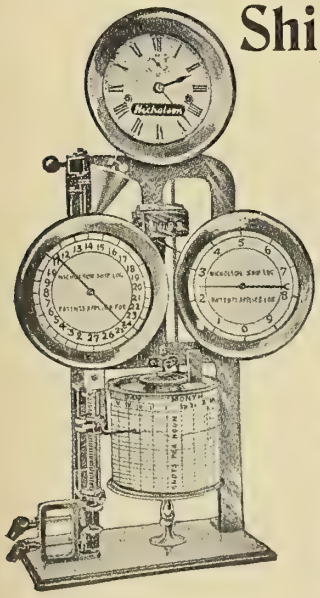

is the only log that accurately shows the speed of the moment of a ship, on a dial, and records this speed on a paper chart for every minute of the trip. It also registers the distance travelled. No line overboard. Placed in chart house or wherever desired.

Catalogue with list of users, together with circular of the Nicholson Distance or Range Finder, upon application to nearest office.

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Book of Designs.—Harry J. Perkins, naval architect, Grand Rapids, Mich., is mailing an unusually handsome book of designs of yachts, fast cruisers, and speed boats designed by him. Mr. Perkins makes a specialty of designing and selling to order special plans for power yachts and launches, gasoline, steam, or electric, of any length of beam and of any style or type. These designs or drawings are made so clear and complete that they have been sent to many parts of the world, including Germany, Russia, Holland, Japan, and other countries, and boats successfully built from them. The designs combine the graceful lines of fast boats with the necessary stability and seaworthy qualities, making use of the most advanced ideas in marine architecture on every subject entering into the construction and distribution of material. This book is sent on receipt of $1.00.

Two Contracts Secured.—The Union Switch and Signal Company recently secured two contracts, one from the Interborough Rapid Transit Company, of New York, for use in the subway, and the other from the North Shore Railway of California. On the first named the Westinghouse electro-pneumatic system is to be installed. A new feature is to be introduced, that of using alternating current. Its combination with the use of track circuits on third rails, which are used for return circuits and at the same time for signaling circuits, introduces what may be serious complications. In order to avoid these difficulties as far as possible, the signals will be controlled by alternating current through rails that are sensitive to alternating current only and which will not be affected by the direct current used for train service in the subway. On the North Shore Railway, which runs about thirty miles north from Saucelito, Cal., the electric semaphore system of automatic block signals is to be used with the track circuit, and this being a high tension, third-rail electric road, alternating current will be used for the signal system.

Tenth Annual Sportsmen's Show.—The tenth annual Sportsmen's Show will be held at Madison Square Garden, Madison Square, New York, opening Friday evening, February 19, 1904. As heretofore, exhibitors will be given ample time for the arrangement and the removal of exhibits prior to the opening and subsequent to the closing of the show. The executive committee ask the support of exhibitors in all branches of sportsmen's supplies, not on the basis of immediate return, but in a far broader and more liberal spirit. The annual Sportsmen's Show without question gradually recruits the ranks of the young sportsmen throughout the country, not only from those who visit the Garden in person, but among those in other cities who read a description of the show and its purpose and view the illustrations in the public press. Every additional person won over to the field of sport means a greater consumption annually of the products of the sportsmen-supply manufacturer. Even though it costs to make a creditable display at the annual Sportsmen's Show, it is an amount that can safely be charged off to advertising account with the assurance that it is the best line of advertising done during the year. Within the past few months the Sportsmen's Exhibition Company has been organized, with a view of creating as its financial heads active workers and experienced and influential men, who will bring to the next show the greatest degree of public interest and success obtainable. Suggestions in any way calculated to add to the attractiveness of the coming show are not only desired but cordially invited. Sportsmen who are desirous of advancing such suggestions in connection with any department or feature of the show will confer a favor upon the management by submitting them and outlining them fully. As soon as they can be prepared, floor plans of the Garden, as arranged for the show of 1904, together with rules covering exhibits, will be forwarded to all prospective exhibitors on request by Executive Committee, Sportsmen's Show, room 421, 1123 Broadway, New York city.

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It will hold 400 lbs. of steam

Once tried always used

Will run twelve months in high speed engines

Arctic Packing

To be used exclusively for packing Ammonia Pumps

This packing is made in several hundred sizes

This packing is specially constructed for ice machine service, of layers of rubber and plies of duck which are so arranged and laid as to best resist the actions of ammonia, cold and heat.

The duck is a specially made duck, frictioned with an entirely new compound heretofore unknown to the rubber trade, and the core and back is of the celebrated Rainbow Packing compound, which is specially adapted to resist ammonia, cold and heat.

This packing is constructed on a strictly scientific basis, and the results obtained thus far have demonstrated fully its value for ammonia packing.

This packing is made in several hundred sizes. The rings may be slipped onto the rod very readily.

The usual rule is to be observed in giving measurements, the depth and width of stuffing box and size of piston rod, in order to get the size desired.

Sole Manufacturers of the

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" 62, N. S. Lawrence, 30 Conn. Ave., New London, Conn.
" 63, Willard Spencer, Str. Quackenbush, A. & T. St. Co., Albany, N. Y.
" 65, W. C. Palmer, c. o. Consumers' Coal Co., Charleston, S. C.
" 67, Jas. K. Dole, Saugatuck, Mich.
" 70, Charles T. Smith, 109 12th St., Astoria, Ore.
" 72, Thomas Navagh, 40 Lake St., Oswego, N. Y.
" 73, Ed. M. Donahue, 1308 Cherry St., Green Bay, Wis.
" 75, Frank D. Capron, Alexandria Bay, N. Y.
" 76, Orson Vanderhoef, Grand Haven, Mich.
" 77, John P. Hall, 1215 Huron St., Manitowoc, Wis.
" 78, J. P. Burg, 366 Lake Ave. South, Duluth, Minn.
" 80, R. P. Cook, 46 Elm St., Albany, N. Y.
" 81, Jas. L. Sweeney, 204 E. Saragossa St., Pensacola, Fla
" 82, Fred H. Gowell, 427 Middle St., Bath, Me.
" 84, Jas. H. Kopf, 308 Adams St., Mobile, Ala.
" 85, Samuel K. Kissack, 442 State St., Alpena, Mich.
" 86, S. A. Smith, 737 Menekannee Ave., Marinette, Wis.
" 87, Geo. B. Milne, 237 W. Canfield Ave., Detroit, Mich.
" 88, C. O. Chapman, S. B. Canal, Sturgeon Bay, Wis.
" 89, L. O. Willix, 89 Elizabeth St., Ogdensburg, N. Y.
" 91, R. Davidson, 17 Fairfield Ave., Har. Sta., Ashtabula, O.
" 92, H. E. McArthur, 16 Abstract Bldg., Saginaw, Mich.
" 93, M. E. Davis, 929 D St., N. W., Washington, D. C.
" 94, George R. Jones, Box 222, Washington, N. C.
" 95, P. J. McMahon, P. O. Box 199, Key West, Fla.
" 100, Thos. F. Sullivan, Honolulu, H. I.
" 101, J. K. Cotton, Box 765, Norfolk, Va.
" 102, Fred W. Linsemeyer, 210 Clinton St., So. Haven, Mich.
" 103, A. E. Pittman, P. O. Box 378, Newbern, N. C.

TRADE PUBLICATIONS.

In the last bulletin issued monthly by Wyman and Gordon, Worcester, Mass., makers of crank shafting, etc., is a short history of the life of William Richard Jones.

An attractive calendar for 1904, issued by David Kahnweiler's Sons, 437 Pearl street, New York, N. Y., is received. At the top is a picture entitled "The New Skipper," and on the reverse side of the calendar are illustrations of the full line of life-saving devices manufactured by this firm. Copies will be sent free to the readers of MARINE ENGINEERING upon application.

The Sarvent Marine Engine Works, of Chicago, Ill., are mailing a handsome catalogue describing and illustrating their marine gasoline engines. The engines manufactured by this company are of the single-, double-, and four-cylinder types. The catalogue also describes and illustrates the Sarvent igniters, automatic mixing valves and reversing clutches.

The Canada Launch Works, Ltd., Carlaw avenue, Toronto, Canada, have issued the 1904 catalogue. This company builds launches of various types, also racing and cruising sailing yachts, either from their own design or from designs which may be submitted. A large variety of launch fittings of all kinds is carried in stock, and they have added a new feature to their trade in that they are now prepared to build "knocked-down boats."

A folder describing the Prairie fire drag, a device for extinguishing prairie fires, is being sent out by the H. W. Johns-Manville Manufacturing Company, 100 William street, New York, N. Y. The drag consists of a chain mat covered with an asbestos covering blanket supplied with chains at two corners and may be easily and quickly adjusted to drag by horn of saddle or by single tree. A wash drawing, by the well-known illustrator, Mabie, shows two mounted cowboys putting out a prairie fire with the drag.

The American Injector Company, Detroit, Mich., issues a very attractive catalogue illustrating the goods which it manufactures. Any person in need of a first-class automatic injector would find the pamphlet very handy, as it fully describes the U. S. injector, which is conceded by 200,000 engineers to be among the best on the market. The catalogue is 3 1-4 by 6 inches and is convenient to carry in the vest pocket. It contains 500 questions and answers of interest to engineers only. Copies may be had upon application by referring to MARINE ENGINEERING.

The Joseph Dixon Crucible Company, Jersey City, N. J., is mailing a handsomely illustrated pamphlet, entitled "Dixon's Graphite Suggestions." The pamphlet describes the numerous and diversified uses of graphite from its mixture ages ago in the war paint of the savage to its present almost universal use in manufacturing and the arts. Electricians, chemists, yachtsmen, printers, hatters, engineers, machinists, lead-pencil makers, painters, and housewives all use it. Even the South American coffee-grower uses it to polish his coffee. Any one interested in the subject should not fail to write for one of these little books.

The American Blower Company, Detroit, Mich., is mailing a catalogue describing its extensive line of heating, ventilating, drying, and mechanical draft apparatus. Catalogue No. 144 is devoted to the A. B. C. fan system, which combines heating and ventilation, insuring a uniformly comfortable temperature and pure air throughout the building in which it is installed. The A. B. C. system of mechanical draft is fully discussed in Catalogue No. 118. Catalogue No. 139 contains detailed description of the A. B. C. moist-air dry kilns, which are simple in design, construction, and operation. The A. B. C. dryers and their uses are explained in Catalogue No. 159. This company also designs special dryers for materials of all kinds from which it is desirable to extract moisture by artificial means. Catalogues covering the lines in which you are interested will be sent on request.

When writing to advertisers please refer to MARINE ENGINEERING.

The C. H. Blomstrom Motor Company, Detroit, Mich., is sending out a folder describing its 15 1-2-foot carvel-built launch, together with illustrations of its 3-4-H.-P. and 11-2-H.-P. marine motors. The company states that it has adopted a jump spark instead of a mechanical spark for these two engines.

The Buffalo Forge Company, Buffalo, N. Y., is mailing its latest catalogue, which is devoted to its celebrated Buffalo forges and blacksmith machinery, showing the improvements in design and construction which have been made from time to time, displaying its line of forges, and illustrating its blacksmith machinery.

A catalogue describing pressure regulators is being distributed by Klipfel and Thomas Company, 70 West Lake street, Chicago, Ill. This catalogue shows a special marine type of steam regulator of fine workmanship and compactness. Vacuum and back-pressure valves are also designed by this firm to meet a large variety of conditions.

The Ohmen Engine Works, San Francisco, Cal., are mailing an illustrated circular describing their vertical high-speed, self-contained, centre-crank engines of the open-frame type. The company also builds generating sets, high-speed engines for belted work, centrifugal pumping outfits, and horizontal tandem-compound engines.

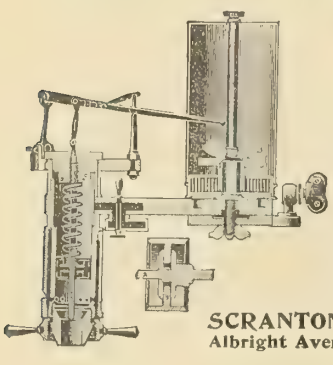
New York Belting and Packing Company, Ltd., 25 Park place, New York, N. Y., is mailing a catalogue describing belting, hose, packing for all purposes, etc., as well as illustrating almost everything which can be made of rubber. The catalogue contains a number of engravings with much detailed description. The text gives a great deal of valuable information.

The Cincinnati Punch and Shear Company, Cincinnati, O., is distributing its latest catalogue, which in part illustrates and generally describes its line of power punching and shearing machinery, rolls, etc. Patents are pending covering some features which are now being incorporated in its new type of machines, which features this company will be glad to explain to those interested in these specialties.

The Mianus Motor Works, Mianus, Conn., has issued an illustrated catalogue of marine and stationary gasoline engines, launches, cargo hoists, and oyster and fishing-boat hoists. The company makes two-cycle, single-cylinder engines, 2 H. P., 4 H. P., and 6 H. P. in size. The four-cycle, double-cylinder engines are of 12 H. P. Numerous testimonials from customers appear in the catalogue, a copy of which will be mailed upon request.

Asbestine Cold Water Paint is described in a catalogue issued by Alden Speare's Sons Company, 100 William street, New York, N. Y. This catalogue contains several illustrations, among which may be mentioned the terminal depot at Boston, Mass., and the frigate *Constitution*. The surfaces of both have been entirely covered with asbestine water-proof and fire-proof paint, which is claimed to be especially adapted for use on surfaces requiring a triple coating, that will resist the action of weather and retard the progress of fire.

AN ENGINEER WANTED



A First-Class Indicator, Reducing Wheel and Planimeter.

Got them of us, at a price so low that he was astonished. YOU can do the same, and should send for our catalogue, which not only describes these instruments fully, but gives $ $ $ worth of instructions in their use. **It is free.**

We make also **Steam Pumps, Steam Separators, Oil Extractors, Shaking Grates, and Furnace Blowers,** all in the catalogue

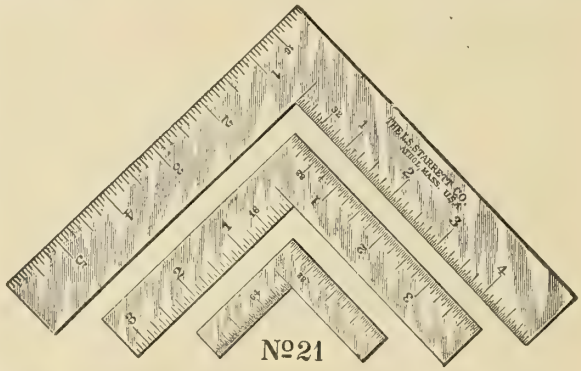
SCRANTON STEAM PUMP CO.
Albright Avenue, Scranton, Pa.

WHEN PURCHASING

TRY SQUARES

GET THE BEST

They cost but little more and they can always be depended upon to be accurate if they are **Starrett make.**



No. 21 squares are of thin, polished steel, and lie flat on the work. Draughtsmen as well as machinists use them. Made in 2, 3, 4 and 6 in. sizes. Several other styles of Try Squares are shown in

Our CATALOGUE No. 17L, which tells of all the STARRETT TOOLS, Sent FREE

The L. S. Starrett Company
ATHOL, MASS.

M. W. Fogg, 202 Front street, New York, N. Y., is mailing an unusually attractive catalogue in which he illustrates some of the goods he is carrying which are especially designed to meet the requirements of the marine trade, including an assortment of upholstering material, etc. This catalogue contains several illustrations showing interior views of yachts, the rooms of which have been upholstered by Mr. Fogg. The catalogue also shows a full line of mattresses, cushions, cut-brass curtain fixtures, springs, couches, perforated mats, and almost everything used in marine furnishing.

Crocker-Wheeler Company, Ampere, N. J., is distributing Bulletin No. 38, describing improvements which are designed to comply with conditions to be met in the wide variety of uses to which small motors may be applied. The design of the motor illustrated is such that it can be used with equal effectiveness for direct-belt or for gear driving. This line of motor is designated Form L and includes machines of from 1-4 to 3 horse power. There is a great number of sizes and a variety of types, which answer any demand requiring small power with a high degree of economy.

BUSINESS NOTES.

AMERICAN STEAM GAUGE COMPANY'S NEW PLANT.—The American Steam Gauge and Valve Manufacturing Company has again been compelled to seek new quarters, owing to the increase of its business, and is at present removing its entire plant and offices from Bismarck street, Roxbury district, to the large brick buildings, 208-220 Camden street, Boston, Mass. The buildings have floor space of 85,000 square feet. The Mowry and Phillips foundry department will also be removed from South Boston and every branch of the business consolidated at the Camden street factory. The new plant will afford more than double the present capacity, and will be employed in producing valves, gauges, and indicators, also special metals and foundry work in the Mowry and Phillips department.

DIXON

THERE are seven degrees of hardness in Dixon's Graphite Cup Greases. The softest are for use on light high-speed machinery; the harder grades for heavier work In making these greases, we use only Dixon's Pure Flake Graphite. Ask for booklet 75-I.

JOSEPH DIXON CRUCIBLE COMPANY,
JERSEY CITY, N. J.

THE STORY OF PHOEBE SNOW.

If you have ever taken a railroad trip you will enjoy the "Story of Phoebe Snow," which describes in a series of dainty pictures the experiences of a pretty girl who went to Buffalo. The illustrations are in seven colors, each reproducing a design of the girl in white which the Lackawanna Railroad has made so familiar in the last few months. The booklet has a particularly pleasing cover and will afford considerable amusement beside giving information which every traveler ought to know. It will be sent in response to request, accompanied by two cents in stamps, to T. W. Lee, General Passenger Agent, New York City.

NEW SALES AGENT.—T. J. Heller, formerly New York agent for the Federal Manufacturing Company for its steel-ball department, has severed his connection with that company and has accepted the sales management of the ball business of the Standard Roller Bearing Company, Philadelphia, Pa., which has recently purchased the ball business of the Grant Tool Company. Mr. Heller will make his headquarters with the Standard Roller Bearing Company, 48th street and Girard avenue, Philadelphia, Pa.

THE ROCKWELL ENGINEERING COMPANY has removed its engineering and executive departments to its factory, Jersey City, N. J. Its sales offices will be, as formerly, 25 Cortlandt street, New York city.

LARGER FACTORY.—The Lincoln and Williams Company, Taunton, Mass., successors to the Lincoln and Wood Company, has purchased the large factory building formerly occupied by the Atlas Tack Corporation, and will continue in it the manufacture of twist drills. The new concern has available more than 30,000 feet of floor space, and will make extensive improvements in its new plant, which is to be equipped with modern appliances.

SUPERHEATED STEAM.—The American Steam Superheater Company, of 176 Federal street, Boston, states that the steam superheater manufactured by it is meeting with great success. This device was designed by Mr. John A. Stevens in 1899. The company states that three which were manufactured in that year have been in daily use since that time, that they are delivering steam at a temperature of 600 degrees, and that the cost of repairs up to the present time has been practically nothing. It states, moreover, that these superheaters are being operated under frequent and sudden variations of steam. Steam superheaters have been in use for a number of years in Europe, but have not until the present met with much favor with American engineers, who have not been satisfied with their practical workings. The American Superheater Company claims that in its device the demand for a practical superheater has at last been met. The company is prepared to contract for the installation of superheaters in new or old steam plants, to meet all requirements of capacity and temperature.

ACETYLENE LIGHTING.—The rapid introduction of acetylene for lighting both in Europe and in this country has placed acetylene in a prominent place among artificial illuminants. It is not only especially adapted to interior illumination, but is giving the most satisfactory results in binnacles and running lights, as well as in searchlights of high power and penetration. It is safer than any other form of lighting because of the small quantity of gas required. A jet carelessly left open would not admit enough gas, even in a small room during an entire night, to cause asphyxiation or produce an explosion. The lighting of yachts (whether sail or steam), steamboats, towboats, and marine craft of every description has always been a problem attended with great practical and economical difficulties. The larger steam yachts of recent construction have generally been equipped with electric-lighting plants, while sailing yachts and sailing vessels of every description have been obliged to depend on oil which, aside from its inconvenience, inefficiency of illumination, and cost of attendance, will always prove unsatisfactory on account of the vitiation of atmosphere, especially during warm weather; and in large passenger vessels the cost of labor in cleaning, trimming, and refilling the lamps constitutes a considerable item of expense. For further information address The Commercial Acetylene Company, 80 Broadway, New York.

WATCH THIS SPACE FOR OUR NUMEROUS SPECIALTIES.

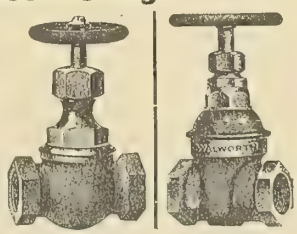
WALWORTH MFG. CO.
TOOLS and SUPPLIES for STEAM WATER and GAS USERS
BOSTON MASS.

COMPARE WALWORTH WEIGHTS With the Weights of Valves You Have Been Using.

ONE INCH BRASS VALVE WEIGHTS

Globe, Jenkins Disc	58 onz.
Globe, Standard (Bronze Seat)	36 onz.
Globe, XX (Bronze Seat)	51 onz.
Gate, Standard	55 onz.
Gate, Extra Heavy	74¼ onz.

THE B ST IS CHEAPEST IN THE END. USE WALWORTH.



JOBBERS SELL THEM—IF YOURS DON'T, WRITE.
New York, Park Row Building. **WALWORTH MFG. CO.,** Boston, 128 Federal Street.
Write for our BLUE CATALOGUE "D." showing complete line of engineers' pipe fitting tools.

A Well-known Company.—Charles C. Moore and Company, engineers, 63 1st street, San Francisco, Cal., have met with great success in marketing the many specialties handled by this concern. In a handsome catalogue the various steam power plants of the Pacific coast equipped by this company are illustrated. Power-plant construction has been its specialty, and the engineering organization is strong, since both the designing and construction departments have the best talent obtainable, through the company's connection with many of the principal engineering establishments in the East. Branch offices maintained in the principal sections of the Pacific coast, with experienced engineers at the head, assure customers advice and recommendations along the lines of the latest and best practice. This company is prepared to make plans and estimates or to undertake the installation of any class of motive power work in all branches.

Underwriter Fire Pump.—The Buffalo Steam Pump Company, North Tonawanda, N. Y., reports unusual activity in the installation of its fire pump, which seems to be meeting with general approval. This fire pump is of the duplicate type, built in a very substantial manner, and with certain improvements suggested by the experience which the insurance inspectors have had with fire pumps, a great many of which have been found in a partly disabled or deteriorated condition, or incapable of delivering the rated volume of water without violent hammer, when suddenly called on for a test by the inspector. This existing condition called for radical changes. Rigid specifications were drawn up, designating the required construction of the underwriter fire pump, no pump to be accepted unless built in strict accordance with said specifications. These pumps are built in strict accordance with the requirements, being tested and approved. They are of modern design, of the best material and workmanship.

Victor Non-corrosive Silver Metal.—In connection with the building of ships, yachts, launches, etc., the question of the uses of various metals necessary in the construction of such vessels is given a great deal of consideration, on account of the corrosion and tarnishing that takes place where the metal is exposed to salt water and air. After many years of experimenting, the Victor Metals Company, East Braintree, Mass., has succeeded in producing an alloy which has proved, by practical experiments, a great success. This metal, called the Victor Non-corrosive Silver, is claimed to fulfill the requirements of being absolutely salt-water proof and non-tarnishing, as well as acid proof. Besides, the metal has a tensile strength of 53,280 pounds to the square inch, with an elongation of 15.7 per cent. in three inches, as per government test. In addition to possessing the above qualities, the metal will, when polished, take a high finish like silver. No zinc protection is necessary where propellers, condensers, sea connections, etc., are made of the Victor Non-corrosive Silver Metal, nor is there any danger from the bilge water, if valves, pipes, fittings, pumps, etc., are made of same. For interior fittings which are constantly in use, as, for example, plumbing fixtures, hardware, trimmings, etc., this silver metal is of importance on account of its lasting and non-tarnishing qualities, whereby it not only saves the expense of replating such fittings, but also the time of cleaning and polishing necessary with other metals. On deck, particularly on yachts and launches, where in the past a great deal of brass and bronze have been used, the silver metal is now being adopted, and a great number of both large and small vessels have been fitted out with this metal for all such fittings as cleats, chocks, ring and eye bolts, rail and awning stanchions, skylight and side-ladder fittings, air ports, pin rails, mast bands, gaff jaws, chain plates, steering gears, windlasses, engine telegraphs, searchlights, etc. Any of our readers wishing further information can obtain such by applying to the general manager of the company, Eric H. Ewertz, 29 Broadway, New York city.

If It Were A Fact...

which, under proper conditions, it is not—that white lead covers better than **ZINC WHITE**; still in view of its greater spreading power and greater durability, **ZINC WHITE** *would be by far the more economical paint.* Any high-grade combination paint based on **ZINC WHITE** will cover more area, pound for pound, than the best white lead, will cover this area equally well, will cover it more pleasingly and more economically and will keep it effectively covered much longer. One does not need to go beyond the facts in possession of any paint manufacturer to prove that **ZINC WHITE** is the vital element in successful paint making.

FREE: Our Practical Pamphlets:

"The Paint Question,"
"Paints in Architecture,"
"Specifications for Architects,"
"House Paints: A Common Sense Talk About Them,"
"French Government Decrees."

The New Jersey Zinc Co.

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WE DO NOT GRIND ZINC IN OIL. LIST OF MANUFACTURERS OF ZINC WHITE PAINTS WILL BE FURNISHED ON REQUEST.

CONDENSER TUBES
last longest if made of
"BENEDICT-NICKEL"
ELECTROLYSIS is positively resisted because "Benedict-Nickel" is an alloy of nickel and copper.
CORROSION is impossible, as the tubing is so perfectly homogeneous.
Our treatise on "Electrolysis of Condenser Tubes" is very valuable and costs you nothing. Send for it.
BENEDICT & BURNHAM MFG. CO.
WATERBURY, CONN.
New York, 253 Broadway Boston, 172 High St.

AN EMPLOYMENT BUREAU

BUILDERS OF SHIPS, Yachts, and Launches are often in need of Superintendents and other employees down the line, including engineers, draftsmen, foremen, machinists, patternmakers, foundrymen, fitters, etc.

ENGINE AND BOILER Builders frequently have similar vacancies which they are unable to fill satisfactorily or promptly.

SHIP AGENTS AND OWNERS may want licensed masters or pilots, engineers or assistants, or other help for shore or sea duty

YACHT AND LAUNCH owners have great difficulty in securing masters, engineers, navigators, and other competent help.

To bring employee and employer together is the sole purpose of MARINE ENGINEERING EMPLOYMENT BUREAU.

First class men seeking employment will find this Bureau of great help in securing positions because of its confidential relations with employers.

Employers have, through this Bureau, the advantage of being brought into communication with men of experience and ability who would otherwise be unknown to them, and whose records have been investigated, and, at the same time, are saved the bother of being overwhelmed by applications for positions as soon as it becomes known that there is a vacancy.

For positions of responsibility the services of this Bureau are particularly valuable.

For full particulars address:

Marine Engineering Employment Bureau,

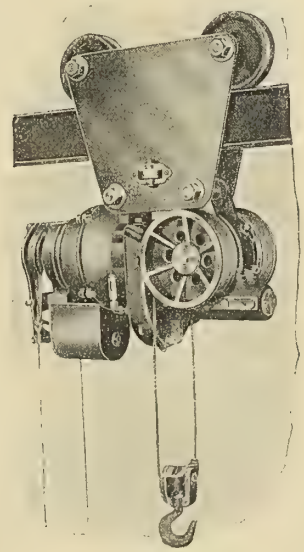
309 BROADWAY, NEW YORK.

A SOUVENIR.—An instructive souvenir was presented to the New England Foundrymen's Association on the occasion of their recent visit to the new foundry and pattern departments of the B. F. Sturtevant Company, Hyde Park, Mass. This souvenir has been published by the B. F. Sturtevant Co. as Bulletin No. 64, a sixteen-page pamphlet, describing and illustrating the departments and their industrial equipments.

A SATISFACTORY VALVE.—The White Star reversible and regrinding check valve, manufactured by the William Powell Company, Cincinnati, O., is meeting with great favor among those who have given it a fair test. This valve is made of the best steam bronze, with the exception of the reversible disk, which is made of a new alloy. The disk, having duplex wearing faces, will last many times longer than those of the ordinary construction. Taking together the staying qualities of the metal and the improved construction, the Powell "White Star" is a production which will compel the favorable attention of progressive engineers and all users of valves.

VESSELS CLASSIFIED.—Among the vessels recently classified by the American Bureau of Shipping, 66 Beaver street, New York, are the following: American screw, *Aransas;* American schooner, *Charles K. Schull;* American schooner, *Edith and May;* American schooner, *Marjory Brown;* American schooner, *William C. Tanner;* American schooner, *Pendleton Bros.;* American schooner, *Robert H. McCurdy;* American schooner, *William K. Park;* American barkentine, *Ethel V. Boynton;* American barkentine, *Nuuanu;* American bark, *James A. Wright;* American three-masted schooners, *Marian, Willie L. Newton, Arthur V. S. Woodruff, E. Marie Brown, Edward H. Blake, Charles H. Valentine, Harry W. Haynes,* and *Willie H. Child;* American *barge, C. R. R. of N. J., No. 2;* American barge, *J. Carlton Hudson;* British barkentine, *Milton;* British schooner, *Nevis;* British three-masted schooners, *Ronald, E. M. Roberts, Adonis, Bluenose, Maritana,* and British bark, *J. H. Bowers.*

SPRAGUE HOISTS



TYPE W ROPE HOIST.
STYLE B TROLLEY CARRIAGE.

are adapted to

SHIPYARDS, DOCKS, ETC.,

and are designed to handle that class of work for which the hand hoist is too slow and which cannot be conveniently and economically handled by traveling cranes.

They are economizing labor and increasing outputs to a wonderful extent. Write for descriptive bulletin No. 21315.

Sprague Electric Company

GENERAL OFFICES:

527 West 34th Street, NEW YORK.

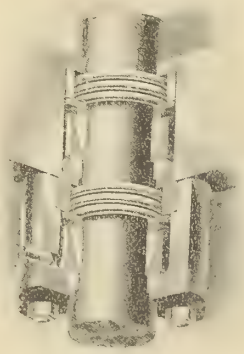
BRANCH OFFICES:

ATLANTA. BALTIMORE. BOSTON. CHICAGO. CINCINNATI.
PHILADELPHIA. PITTSBURG. ST. LOUIS.

Blue-Print Cloth.—Photo cloths which may be used as perfect substitutes for blue-print paper are meeting with public approval. They are manufactured by the Silkdown Company, Everett Station, Boston, Mass., and named "Silkdown" photo cloth and "Allsilk" photo cloth, both of which will prove of great value to draftsmen in that they can be printed from negatives or tracings precisely as blue print paper is used, and, by the use of certain chemicals, various other colors may be produced besides the blue. It is practically indestructible, can be rolled, folded, or wadded up like a pocket handkerchief, and if soiled can be washed. It is made for the amateur and professional photographic trade, but is not generally known to draftsmen. The prints from it are clear and sharp.

Large Sales.—In the past fortnight a number of notable orders have been received by the Crocker-Wheeler Company, Ampere, N. J., and these being pretty evenly divided among its larger branch offices, indicate that the improving condition of business is not local to any one section. One order, from the Lorain Steel Company, Lorain, O., received through the Pittsburg office, called for 41 motors, ranging in size from 2 1-2 to 360 H. P. and representing a total of 1,423 H. P. Another large order came from the New Jersey Zinc Company, of Hazard, Pa., through the New York office for one 125-Kw. and two 600-Kw. generators, and 37 motors, aggregating 401 H. P. The Philadelphia office placed an order from the Warren Foundry and Machine Company, of Phillipsburg, N. J., for one 200-Kw. generator, four 35-H.-P. motors and two 60-H.-P. motors; and through the Chicago office the G. H. Hammond Company ordered for its packing plant at the Union Stock Yards, in that city, one 50-, one 25-, and two 20-H.-P. motors, and an 800-Kw., 550-volt, size 896 engine-type generator. This last is a duplicate of one now building for the St. Louis Exposition, the entire intramural plant for which will be operated by generators supplied by the Crocker-Wheeler Company.

Get the Packing that is Right



We make it on correct principles and guarantee it to meet the requirements for which it is intended.
Our Packing is a departure from the old-fashioned trouble-giving stuff which is only fit for the ash heap.
Throwing money away is all right, but none of us do it intentionally. Why not economize in this line and get a Packing of long life which experience has proved to be as good as any, and better than most of the packings on the market?

THE UNITED STATES METALLIC PACKING COMPANY

427 North Thirteenth Street, Philadelphia, Pa.
509 Great Northern Building, Chicago, Ill.
MORAN BROTHERS, - - - Seattle, Wash.

Hawkins Works

In again asking the attention of the Mechanical World to the

ENGINEERS' STANDARD LIBRARY

and the "little at a time" payment plan, on which these books are supplied, the publishers wish to express their appreciation of the hearty support and endorsement tendered by those who have been and continue to be students of engineering, electricity and mechanical drawing.

The Hawkins Works are kept constantly "up to the times" by frequent revisions and additions by the author; to this fact is undoubtedly largely due their continued popularity.

The seven volumes which comprise the author's complete works, are supplied to responsible parties on the one dollar monthly payment plan; the complete library is delivered to the subscriber, express or post prepaid, upon receipt of the first payment of one dollar, the balance to be sent one dollar monthly to publishers, by post-office or express money order; see order coupon below.

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Hawkins' Self-Help, Mechanical Drawing, price post paid.....$2.
II.
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Hawkins' Aids to Engineers' Examinations, price post paid. 2.
(*With Questions and Answers.*)
IV.
Hawkins' Maxims and Instructions for the Boiler Room, price post paid..... 2.
V.
Hawkins' Hand Book of Calculations for Engineers, price post paid..... 2.
VI.
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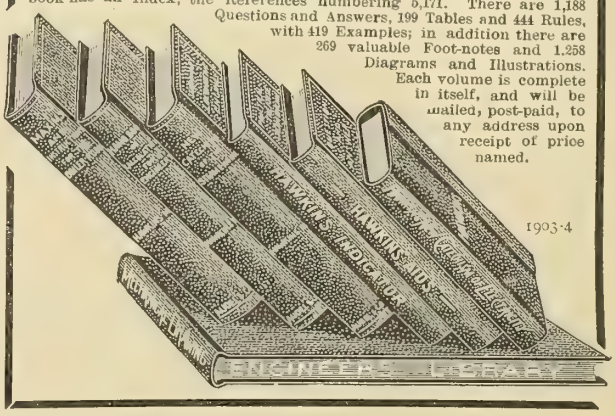

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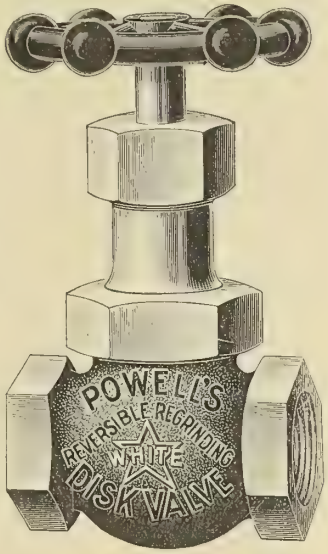

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MODERN PACKING.—Improvements in the past ten years in steam-engineering practice have been great. The pressures of live steam have been increased and sheet packings that were good ten years ago will not do the work to-day. There are packings that will not harden under the steam pressure now required. The Republic Rubber Company, Youngstown, O., is putting a very reliable packing on the market which is a rubber combination producing the highest quality of steam-flange packing. It will retain all its life and elasticity while being subjected to any degree of heat. The higher the pressure, the greater the resistance. It undergoes 500 degrees of heat while in the process of manufacture, a higher temperature than it even would be called upon to resist in actual service.

A SUPERIOR GASKET.—The United States Indestructible Gasket Company, 8 South William street, New York, reports large orders for gaskets, which is largely due to the general satisfaction its gaskets are giving throughout the United States. The metallic gasket may be used as general packing in place of rubber or other destructible materials. It consists of thin sheet metal, stamped with concentric corrugations. Three to six corrugations are all that are necessary. In cases where the flanges are thin and for this reason liable to bend when the bolts are tightened, it is advisable to extend the copper gasket to the full width of flange. This will, of course, require the cutting of the bolt hole in the gasket. Connections made with these gaskets will not blow out after continued use, for each corrugation makes the entire circle of the flange, and as long as contact is kept complete by compression, the joint cannot leak. This gasket never blows out like rubber. It may be put in place while steam is leaking through a valve.

EFFICIENCY OF CORRESPONDENCE SCHOOLS.—A notable instance of the efficiency of the modern correspondence school in aiding students to solve problems in actual work was given recently in Cleveland, O. George F. Tinkham, for a number of years the engineer of the Upson Nut Company, Cleveland, O., has, through native skill, and knowledge gained by correspondence study, invented and patented a hydro-carbon device for increasing the efficiency of a brick furnace. It was decided by the officers of the company to determine by actual test the merits of the two systems, two of the seven boilers of the plant using this device and the other five using mechanical stokers. Agreeing to this trial of his invention, Mr. Tinkham immediately wrote to the American School of Correspondence, who suggested Mr. Carl S. Dow, chief of the department of mechanical engineering, as a man best fitted to give an impartial judgment in the matter and look out for his interests. The results were most gratifying to the patent system. Much credit is due to the inventor. According to his own statement, Mr. Tinkham owes nearly all his knowledge of the theory of engineering to his course with the American School of Correspondence; his boyhood schooling ending when he was eleven years old, he having no other training but practical experience until he took up correspondence work at the age of forty-five.

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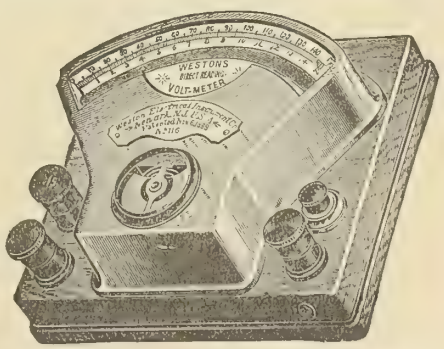

WESTON Standard Portable Direct Reading Voltmeter.

Branch Office.—The Crocker-Wheeler Company, Ampere, N. J., has established headquarters for the Southern representative of its Washington office, S. M. Conant, at No. 425 Empire Building, Atlanta, Ga.

Appointed Auditor.—Charles T. Bishop, formerly with Ladenburg, Thalmann and Company, New York, and late Paymaster in the United States Navy, has been appointed auditor of the H. W. Johns-Manville Company, 100 William street, New York.

Acid Open-Hearth Casting Plant.—The National Steel Foundry Company, New Haven, Conn., announces the establishment of an acid open-hearth steel-casting plant. The conditions are favorable for the production and delivery of good work promptly.

Foreign Branches.—The Lunkenheimer Company, Cincinnati, O., manufacturers of brass, iron, and steel specialties, wishes to advise its patrons that it has opened a branch office in Paris, France. This office is located at 24 Boulevard Voltaire, where a complete stock of goods will be carried.

Something New for Small Yachts.—The Empire State Engineering Company, New York, N. Y., presents a safe and complete marine boiler constructed for small units. Recognizing the fact that there has been a long-felt want existing for small, efficient, and compact boilers for launches and yachts, this company is presenting its Neptune boiler in connection with its Sunlight oil-fuel burner. This boiler does away entirely with the usual disadvantages of water-tube or shell boilers for small units.

Boilers for English Navy.—The Admiralty have decided to adopt Yarrow boilers for supplying steam for four-fifths of the power in each of the four new cruisers of 23,000 I. H. P., the remaining fifth of the boiler installation to consist of cylindrical boilers. The orders for three of these cruisers have been placed, one each with Messrs. Vickers Sons and Maxim, Armstrong, Whitworth and Co., and the Fairfield Company. The machinery for the vessel of the Armstrong Company is to be constructed by Messrs. Hawthorn, Leslie and Co. The fourth cruiser is to be built at Pembroke Dockyard, and the Wallsend Slipway will supply the engines, while the boilers will be constructed by Messrs. Yarrow and Co. The decision of the Admiralty to place the Yarrow boiler in vessels of this large power is a step in advance for the type of boiler with small diameter tubes, placed approximately in a vertical position; for, although the tubes in the new boilers will be rather larger than those in the so-called "express" boilers, such as are used in torpedo craft, and the thickness of the metal will, it is said, be greater, yet they will be considerably less in diameter than the tubes of the horizontal type.

Army and Navy Liquid Glue is the name of the new and very adhesive cement which the Wachter Manufacturing Company, Baltimore, Md., has placed upon the market. The glue is put up in cans, kegs, barrels, and bottles, as required. It glues anything, and, as the manufacturers say, it is "the glue for you." They mean this latter phrase to be taken literally, because at the back of the pamphlet which they have issued they tell "what it is, how it is, and what it is good for." They say of this pure-hide-and-sinew glue (which is in liquid form and does not need to be prepared in any way) that, though they will be glad to have a representative talk the matter over and show by actual tests proof of their claims, yet in the meantime samples and prices are to be had for the asking. It is put up conveniently in cans of all sizes, in small mucilage bottles for office use, and in tubes. Write for the little booklet telling the story of its invention or discovery by Mr. J. W. Wachter, late of the U. S. Navy Department, and also ask for a sample and try the liquid glue, or let your wife try it on a broken cup and saucer, or you try it in the shop on wood or iron, and see for yourself. Write Wachter Manufacturing Company, Baltimore, Md., and say Marine Engineering gave the clue to the glue.

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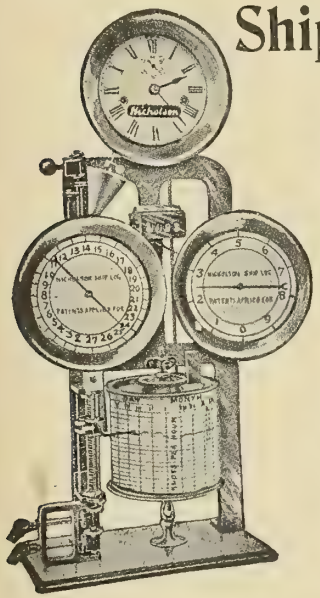

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THE STANDARD ROLLER BEARING COMPANY, 48th street and Girard avenue, Philadelphia, Pa., has purchased the ball business of the Grant Tool Company, Franklin, Pa., and is manufacturing under the personal management of R. H. Grant, formerly manager of the Grant Ball Company, Cleveland, O.

A NEW AGENCY.—The Nernst Lamp Company, of Pittsburg, has recently established an agency for the sale of Nernst lamps and supplies with the W. G. Nagel Company, Toledo, Ohio; this company having for several years acted as selling agents for the Westinghouse Electric and Manufacturing Company.

A NEW STEAM TRAP has been brought out by the Scranton Steam Pump Company, to meet the demand for a trap to stand the extremely hard service found in the coal mines, where steam lines are sometimes several thousand feet long, and either bare or very imperfectly covered, and where ordinary traps prove useless in most cases. This trap is designed to permit of interchangeable valves of different sizes, so that it may be used for high or low pressure by simply removing one valve tube and substituting another without disconnecting the trap from the piping. The maker claims that this trap will discharge more water at a given pressure than any other. It is provided with a strainer, which may be removed in less than one minute without disconnecting any pipes. The Lippincott trap is provided with a copper float which is guaranteed for 150 pounds working pressure, and will be replaced free of charge within one year. This trap is intended to go with a Lippincott steam separator, but is, of course, adapted for any other separator, and for heating systems and other purposes as well. Special circulars of this trap, as well as separators, steam-engine indicators, pumps, grate bars, etc., may be had by writing to the Scranton Steam Pump Company, Marion street, Scranton, Pa.

A SATISFACTORY HOIST.—In order to meet the demands for an easily-operated and efficient power hoist, the Armington electric hoist has been built by the Cleveland Crane and Car Company, Wickliffe, O. The advantage of occupying small space, together with capacity for handling a large load with ease, rapidity, and efficiency, is readily appreciated by all who contemplate the installation of any hoisting mechanism. This company has placed this hoist in many manufacturing concerns throughout this and other countries. The hoists are made largely of steel, and all the gears are of the spur type, heavy pitch, and cut from the solid. The fact that this company does not use worm gears or differential gearing of any kind on this hoist, or on any of its construction, added to the fact that extra care is taken in assembling, places it easily as the equal of any in the market. The load is entirely sustained by an automatic safety brake. In descending, the load moves only as long as the operator pulls the pendant rope, and the load is raised only as long as the operator desires. Should he suddenly leave, the motor stops automatically and the load remains where he left it, sustained by the brake. The hook is well-proportioned, forged of steel, and is made to swivel easily.

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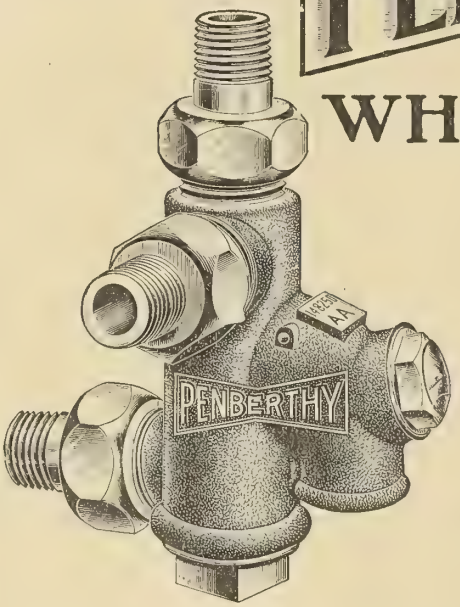

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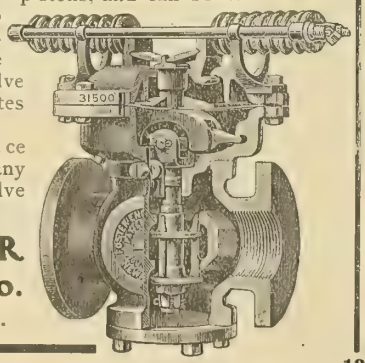

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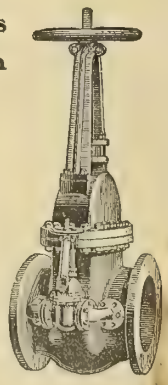

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